3.7 ASTER Scenario

3.7.1 ASTER Scenario Description

This scenario shows how the ECS supports the ASTER mission.

ECS provides a mechanism for ECS Users to submit Data Acquisition Requests (DARs). ECS notifies the ECS User when that DAR has been fulfilled. ECS receives ASTER data via tape, from ASTER GDS. These tapes contain L1A and L1B data. This data is provided to ECS regardless of whether or not ECS Users had previously submitted DARs.

ECS provides support for users to request processing of the L1A and L1B data to higher information levels, via requests for On-Demand Processing. A request for On-Demand Processing may require a sequence of algorithms to be run on the specified data. Granules produced by On-Demand Processing are not permanently archived.

ECS supports the insertion of ASTER Expedited Data Set (EDS) from EOS Data and Operations System (EDOS) and its immediate availability to selected ASTER Scientists.

ECS provides support for interoperability with ASTER GDS so that an EOSDIS user or an ASTER GDS user is able to view the data holdings and order production data of the other system.

The following system functionality is exercised in this scenario:

- Java DAR Tool usage for DAR submittal (Thread A)
- Data Tape Ingest (Threads B & I)
- Backward Chaining (Thread C)
- Science User metadata update (Thread D)
- On-Demand Production (Thread E, F & G)
- Simplified ASTER Expedited Data Support (Thread H)
- Routine Processing Planning for Start/Stop and Insertion time (Threads I & J)
- Spatial Query/Padding (Thread K)
- View EDC data holdings and order production data (Threads L & M)
- View ASTER GDS data holdings and order production data (Thread N)
- Support of attached standing on-demand processing orders to a DAR (Thread O)

Figure 3.7.1-1 is a dataflow diagram that illustrates the relationships between the data types and PGEs used in the ASTER scenario.

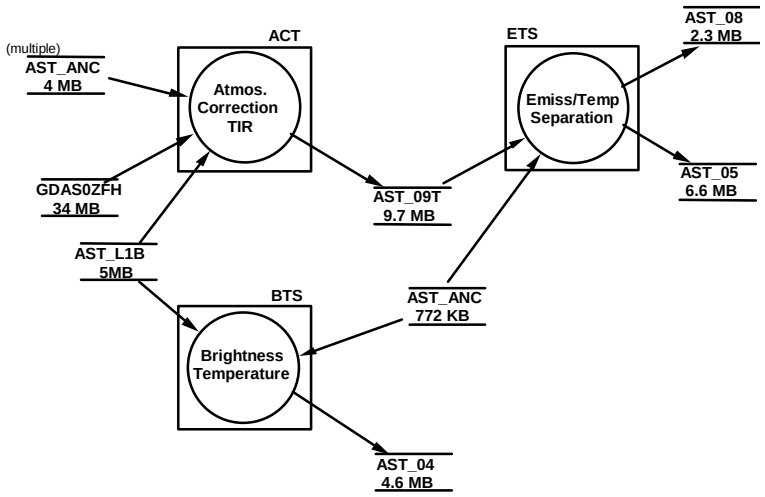

Figure 3.7.1-1. ASTER Scenario PGE/Data Relationships Diagram

3.7.2 ASTER Scenario Preconditions

The following ESDTs have been inserted into the ECS:

- AST_ANC (ASTER Ancillary data)
- AST_EXP (ASTER Expedited L0 data)
- AST_L1A (ASTER L1A data)
- AST_L1B (ASTER L1B data)
- AST_04 (L2 Brightness Temperature)
- AST_05 (L2 Surface Emissivity)
- AST_08 (L2 Surface Temperature)
- AST_09T (L2 Surface Radiance)
- ASTER14DEM (ASTER DEM Product)
- GDAS0ZFH (NCEP provided ancillary data)
- PH (Product History)
- PGEEXE (PGE Execution Granule)

The following ASTER PGEs have passed SSI&T and have been inserted into the ECS:

- ACT -- Atmospheric Correction – TIR (Thermal Infrared)
- ETS -- Emissivity/Temperature Separation
- BTS -- Brightness Temperature at Sensor

Ancillary granules (AST_ANC and GDAS0ZFH) have been inserted into the ECS.

The Science User must be a registered ECS User whose profile reflects a user authorized to submit a DAR.

3.7.3 ASTER Scenario Partitions

The ASTER scenario has been partitioned into the following threads:

- **ASTER DAR Submission** (Thread A) - This thread shows the usage of the CLS Java DAR Tool, and its interaction with GDS and other ECS components (section 3.7.4).
- **ASTER GDS Tape Insertion** (Thread B) - This thread shows how the ECS inserts data provided by GDS on DTF-2 tape (see section 3.7.5).
- **ASTER Backward Chaining** (Thread C) - This thread shows how the system supports requests from ECS users to produce data requiring a sequence of algorithms to be run (see section 3.7.6).
- **ASTER QA Metadata Update** (Thread D) - This thread shows how the ECS supports updating the QA metadata of a specified granule (see section 3.7.7).
- **ASTER On-Demand High Level Production** (Thread E) - This thread shows how the ECS supports users request for On-Demand production (see section 3.7.8).
- **ASTER On-Demand Non-Standard L1B Production Thread** (Thread F) - This thread shows how the ECS supports users request for On-Demand production of non-standard L1B data products (see section 3.7.9).
- **ASTER On-Demand DEM Production Thread** (Thread G) -- This thread shows how the ECS supports users request for On-Demand production of the DEM data product (see section 3.7.10).
- **ASTER Simplified Expedited Data Support** (Thread H) - This thread shows how the ECS supports a simplified version of Expedited data support (see section 3.7.11).
- **ASTER Routine Processing Planning Data Start/Stop Time** (Thread I) – This thread shows how planning is done to create data processing jobs for ASTER routine processing (see section 3.7.12).
- **ASTER Routine Processing Planning Insertion Time** (Thread J) – This thread shows how to perform ASTER BTS (Brightness Temperature at Sensor) PGEs (see section 3.7.13).
- **ASTER Spatial Query** (Thread K) -- This thread illustrates how to perform ASTER processing for a predefined geographic area. This area can be expanded (padded) by a predefined number of kilometers. (See section 3.7.14).
- **ASTER View ECS Data Holdings** (Thread L) – This thread shows how an ASTER GDS user can obtain information about the location and other attributes of specified data sets, and browse specified data sets. (See section 3.7.15).

- **ASTER Price & Order Data** (Thread M) – This thread shows how an ASTER GDS user can obtain a price estimate for ECS products, place an order for ECS products stored at any DAAC and obtain the status of a previously placed order. (See section 3.7.16).
- **User View And Order ASTER GDS Data** (Thread N) – This thread shows how an ECS user can obtain information on the attributes of specified data sets, browse specified data sets and place an order for ASTER products stored at GDS. (See section 3.7.17).
- **ASTER Attached DPRs (Standing Orders)** (Thread O) -- This thread shows how the ECS supports user requests for attaching standing, on-demand processing orders to a Data Acquisition Request (DAR). The processing and distribution of the on-demand requests that result from these orders is identical to standard on-demand production discussed in Section 3.7.8. This new capability is an extension of that existing on-demand capability. (See section 3.7.18).

3.7.4 ASTER DAR Submission Thread

This thread shows the usage of the CLS Java DAR Tool, and its interaction with GDS and other ECS components.

3.7.4.1 ASTER DAR Submission Thread Interaction Diagram - Domain View

Figure 3.7.4.1-1 depicts the ASTER DAR Submission Thread Interaction - Domain View.

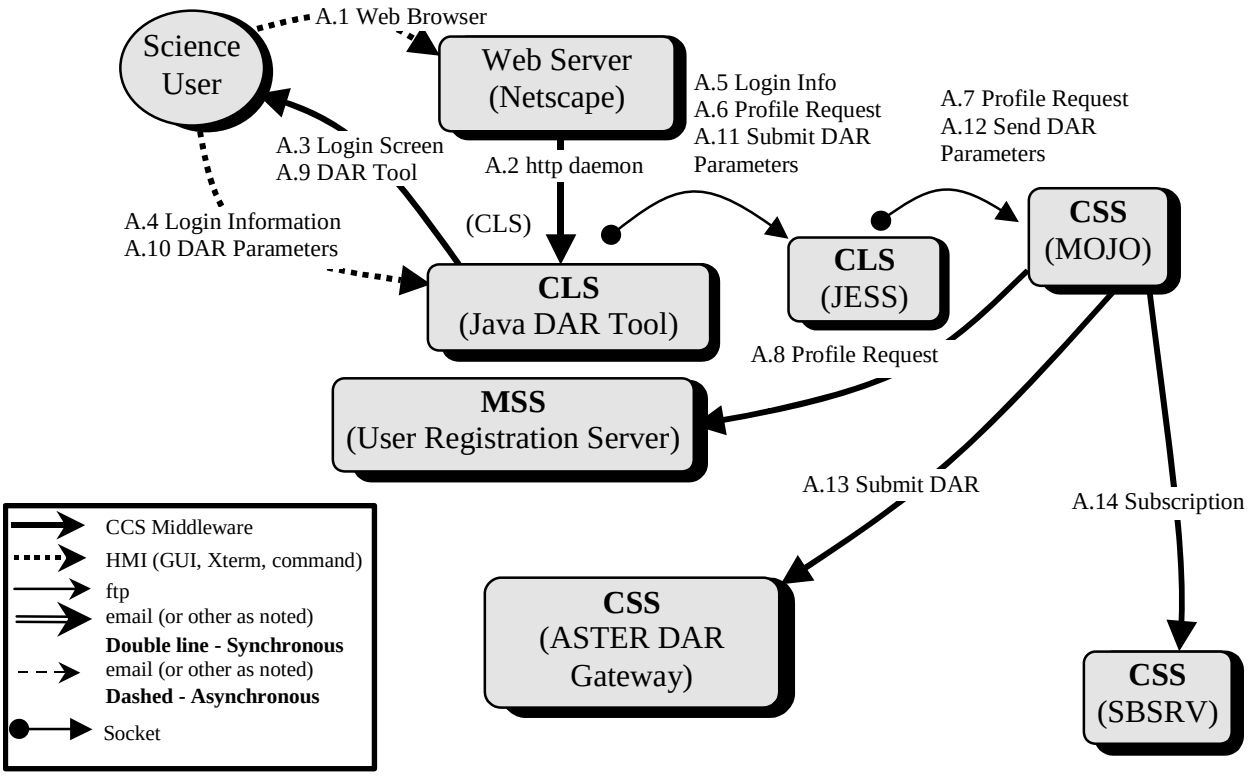

Figure 3.7.4.1-1. ASTER DAR Submission Interaction Diagram

3.7.4.2 DAR Submission Thread Interaction Table - Domain View

Table 3.7.4.2-1 provides the Interaction - Domain View: ASTER DAR Submission.

Table 3.7.4.2-1. Interaction Table - Domain View: ASTER DAR Submission (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
A.1	Web Browser	Science User	Web Server	None	None	A Science User connects to the Java DAR Tool Server.
A.2	Http daemon	Web Server	CLS (Java DAR Tool)	None	None	The HyperText Transfer Protocol (http) daemon establishes a connection for the client.
A.3	Login Screen	CLS (Java DAR Tool)	Science User	None	None	The Java DAR tool provides a login screen for the Science User.

Table 3.7.4.2-1. Interaction Table - Domain View: ASTER DAR Submission (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
A.4	Login Information	Science User	CLS (Java DAR Tool)	None	None	The Science User supplies login information to the Data Acquisition Request (DAR) Tool.
A.5	Login Info	CLS (Java DAR Tool)	CLS (JESS)	None	None	The Java DAR Tool relays login information to the Java Earth Science Server (JESS).
A.6	Profile Request	CLS (Java DAR Tool)	CLS (JESS)	None	None	Once the user is authenticated, the Java DAR Tool requests the user's profile.
A.7	Profile Request (cont'd)	CLS (JESS)	CSS (MOJO Gateway)	None	None	The Profile Request is translated into the appropriate format and sent to the Mission Oriented middleware of JEST Objects (MOJO).
A.8	Profile Request (cont'd)	CSS (MOJO)	MSS (User Registration Server)	None	None	The Message Oriented middleware of JEST Objects formats and submits request to the System Management Subsystem (MSS) User Registration Server.
A.9	DAR Tool	CLS (Java DAR Tool)	Science User	None	None	The Java DAR Tool is instantiated on the Science User's platform.
A.10	DAR Parameters	Science User	CLS (Java DAR Tool)	None	None	The User creates or modifies a request and submits it.
A.11	Submit DAR Parameters	CLS (Java DAR Tool)	CLS (JESS)	None	None	The Java DAR Tool relays parameters to the Java Earth Science Server.
A.12	Send DAR Parameters	CLS (JESS)	CSS (MOJO Gateway)	None	None	Parameters are passed to the Mission Oriented middleware of JEST Objects for translation.
A.13	Submit DAR	CSS (MOJO Gateway)	CSS (ASTER DAR Gateway)	None	None	A DAR submission is made to the [ASTER] Ground Data System (GDS) Application Programming Interface (API) on behalf of the ECS user.
A.14	Subscription	CSS (MOJO Gateway)	CSS (SBSRV)	None	None	A subscription is entered for this submission.

3.7.4.3 ASTER DAR Submission Thread Component Interaction Table

Table 3.7.4.3-1 provides the Component Interaction: ASTER DAR Submission.

Table 3.7.4.3-1. Component Interaction Table: ASTER DAR Submission (1 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
A.1.1	Startup Java DAR Tool	Science User	World Wide Web Server	HMI	From the browser, a User starts the Java DAR Tool.
A.2.1	Web Server downloads Java DAR Tool	Web Server	EcClWbJdt (JAVA DAR Tool)	CCS Middleware	The Java DAR Tool starts on client platform.
A.3.1	Login Screen Instantiated	EcClWbJdt (Java DAR Tool)	Science User	CCS Middleware	A Login Screen is drawn on the user's screen.
A.4.1	Login Information	Science User	EcClWbJdt (Java DAR Tool)	HMI	The user sends the login information.
A.5.1	Login Information	EcClWbJdt (Java DAR Tool)	JESS	Socket	Log in information is sent from the Java DAR Tool to the Java Earth Science Server.
A.6.1	Profile Request	EcClWbJdt (Java DAR Tool)	JESS	Socket	Once the user is authenticated, the user profile request is passed from the Java DAR Tool to the Java Earth Science Server.
A.7.1	Profile Request	JESS	EcCsMojo Gateway	Socket	A profile request is formatted and passed from the Java Earth Science Server to the Message Oriented middleware of JEST Objects.
A.8.1	Profile Request	EcCsMojo Gateway	EcMsAcRegUserSrvr	CCS Middleware	The Mission Oriented middleware of JEST Objects sends the profile request to the System Management Subsystem's User Profile Server.
A.9.1	DAR Tool downloaded	EcClWbJdt	Science User	CCS Middleware	The Java DAR Tool screen(s) are downloaded to the user's machine.
A.10.1	DAR Parameters	Science User	EcClWbJdt (Java DAR Tool)	HMI	DAR Parameters are entered into the Java DAR Tool.
A.11.1	Submit DAR Parameters	EcClWbJdt (Java DAR Tool)	JESS	Socket	DAR parameters are passed from the Java DAR Tool to the Java Earth Science Server.

Table 3.7.4.3-1. Component Interaction Table: ASTER DAR Submission (2 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
A.12.1	Send DAR Parameters	JESS	EcCsMojo Gateway	Socket	DAR parameters are relayed from the Java Earth Science Server to the Mission Oriented middleware of JEST Objects.
A.13.1	Submit DAR	EcCsMojo Gateway	EcGwDAR Server	CCS Middleware	DAR Parameters are relayed from the Mission Oriented middleware of JEST Objects to the ASTER DAR Gateway.
A.14.1	Subscriptio n	EcCsMojo Gateway	EcSbSubS erver	CCS Middleware	Entering a subscription so the user knows when the request is filled.

3.7.5 ASTER GDS Tape Insertion Thread

This thread shows how the ECS inserts data provided by GDS on DTF tape. This data is either AST_L1A or AST_L1B data.

3.7.5.1 ASTER GDS Tape Insertion Thread Interaction Diagram - Domain View

Figure 3.7.5.1-1 depicts the ASTER GDS Tape Insertion Interaction.

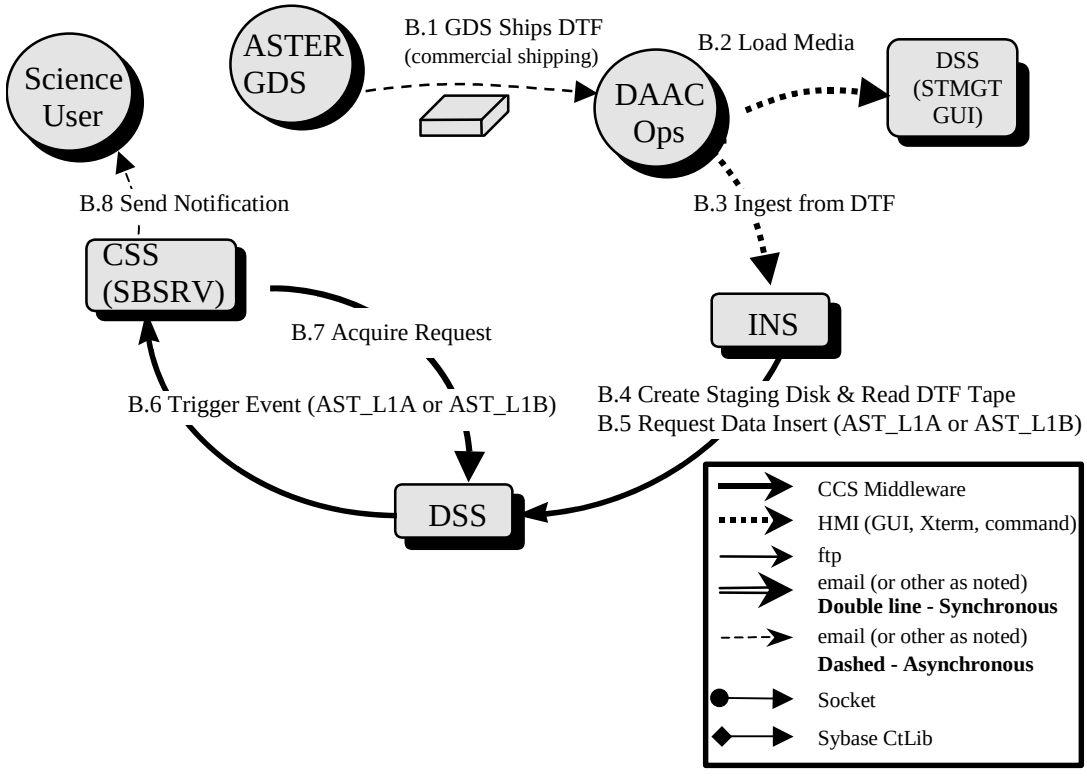

Figure 3.7.5.1-1. ASTER GDS Tape Insertion Interaction Diagram

3.7.5.2 ASTER GDS Tape Insertion Thread Interaction Table - Domain View

Table 3.7.5.2-1 provides the Interaction - Domain View: ASTER GDS Tape Insertion.

Table 3.7.5.2-1. Interaction Table - Domain View: ASTER GDS Tape Insertion (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
B.1	GDS Ships DTF Tape(s)	ASTER GDS	DAAC Ops	None	None	The ASTER Ground Data System uses commercial shipping vendor, sends DTF tapes containing AST_L1A or AST_L1B data. Tape contains data takes that are both due to ECS DARs as well as data that was not requested via ECS.
B.2	Load Media	DAAC Ingest/Distribution Technician	DSS (STMGT)	None	DTF Tape is loaded into Device	A DAAC Ingest/Distribution Technician loads the DTF tape using the Storage Management Graphical User Interface (GUI).
B.3	Ingest from DTF	DAAC Ingest/Distribution Technician	INS (INGST)	None	Get Media Id from STMGT GUI	A DAAC Ingest/Distribution Technician loads the DTF tape and, using an Ingest GUI, prepares to read the tape.
B.4	Create Staging Disk & Read DTF Tape	INS (INGST)	DSS (SDSRV)	None	None	Ingest interfaces with the Data Server Subsystem to create an Ingest staging disk area and reads the DTF tape into this staging disk area.
B.5	Request Data Insert	INS (INGST)	DSS (SDSRV)	2 granules @ 5 MB	AST_L1A AST_L1B ESDTs	Ingest inserts the new ASTER granules into the Science Data Server.
B.6	Trigger Event	DSS (SDSRV)	CSS (SBSRV)	None	None	Upon successful completion of insertion of each AST_L1A or AST_L1B granule, the AST_L1A:Insert or AST_L1B:Insert event is triggered, with the qualifiers including all the XARids attached to that data.
B.7	Acquire Request	CSS (SBSRV)	DSS (SDSRV)	None	None	The Subscription Server sends an "acquire" request to the Science Data Server for data needed for a subscription.

Table 3.7.5.2-1. Interaction Table - Domain View: ASTER GDS Tape Insertion (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
B.8	Send Notification	CSS (SBSRV)	Science User	None	None	Send notification to the Science User that AST_L1A or AST_L1B granules for their DAR have been inserted. The notification message includes the Universal Reference (UR) of the granule, as well as the DAR IDs that have been matched.

3.7.5.3 ASTER GDS Tape Insertion Thread Component Interaction Table

Table 3.7.5.3-1 provides the Component Interaction: ASTER GDS Tape Insertion.

Table 3.7.5.3-1. Component Interaction Table: ASTER GDS Tape Insertion (1 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
B.1.1	Startup STMGT GUI	DAAC Ingest Technician	EcDsStmgt GUI	Command	A DAAC Ingest Technician invokes the Storage Management Graphical User Interface (GUI) using the start script. The DAAC Ingest Technician selects the Resource Mgmt Tab on the Storage Management GUI.
B.1.2	Select Media Type	DAAC Ingest Technician	EcDsStmgt GUI	GUI	A DAAC Ingest Technician selects DTF from the Media Type Pulldown menu. The DAAC Ingest Technician clicks the Server Id and selects the Manage Hardware Button.
B.1.3	Select Load Media	DAAC Ingest Technician	EcDsStmgt GUI	GUI	A DAAC Ingest Technician clicks the Drive Name and selects Load Media from the Media Operations pulldown menu.
B.1.4	Enter Media ID	DAAC Ingest Technician	EcDsStmgt GUI	GUI	A DAAC Ingest Technician fills in the Media Id on the Load Media window. The DAAC Ingest Technician also selects the OK button.
B.2.1	Startup Ingest GUI	DAAC Ingest Technician	EcInGUI	Command	A DAAC Ingest Technician invokes the Ingest GUI using the start script. The DAAC Ingest Technician selects the Media Ingest tab on the Ingest GUI.

Table 3.7.5.3-1. Component Interaction Table: ASTER GDS Tape Insertion (2 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
B.2.2	Select Ingest Device	DAAC Ingest Technician	EcInGUI	GUI	A DAAC Ingest Technician selects the media device (i.e., DTF tape) to read data from and selects the data provider. The DAAC Ingest Technician also selects the location of the DDR as embedded in the media and enters the DDR name. The Technician gets the Media Id from the Storage Management GUI.
B.3.1	Allocate Media Resource	EcInGUI	EcDsStRequestManagerServer	CCS Middleware	Ingest now creates the Resource Manager for the DTF tape via a Resource Manager Factory. The correct DTF resource is determined from configuration information within the resource factory.
B.3.2	Create Staging Disk	EcInGUI	EcDsStRequestManagerServer	CCS Middleware	Ingest creates a staging disk area for the delivery record file.
B.3.3	Read DTF Tape	EcInGUI	EcDsStRequestManagerServer	CCS Middleware	Ingest reads the delivery record file. From this file, the type and amount of data to be read is determined. The delivery record file is in the first tar set on the tape.
B.3.4	Create Staging Disk	EcInGUI	EcDsStRequestManagerServer	CCS Middleware	Ingest creates staging disk areas. The correct Staging Disk Server is determined from the Ingest Database. The amount of staging disk area to request is determined from the delivery record file.
B.3.5	Read DTF Tape	EcInGUI	EcDsStRequestManagerServer	CCS Middleware	Ingest reads data files from the DTF tape.
B.3.6	Send Request	EcInGUI	EcInReqMgr	CCS Middleware	The Ingest Graphical User Interface (GUI) process copies the Process Delivery Record (PDR) file read into the remote directory and sends an Ingest Request to the Ingest Request Manager.
B.3.7	Granule Process Request	EcInReqMgr	EcInGran	CCS Middleware	The Ingest Request Manager packages the request into granules and sends them to the Ingest Granule Processor.
B.4.1	Connect to SDSRV	EcInGran	EcDsScienceDataServer	CCS Middleware	Ingest begins a session with the Science Data Server by connecting. The correct Science Data Server is determined during Ingest Request Manager startup from a configuration file. This is pertinent if there are multiple Science Data Servers in use at one DAAC in one mode. The data type is determined from the delivery record file.

Table 3.7.5.3-1. Component Interaction Table: ASTER GDS Tape Insertion (3 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
B.4.2	Request MCF	EcInGran	EcDsScienceDataServer	CCS Middleware	Ingest requests the Metadata Configuration File (MCF) from the Science Data Server for the data being inserted.
B.4.3	Validate Metadata	EcInGran	EcDsScienceDataServer	CCS Middleware	After building a metadata file for the input data granule, Ingest asks the Science Data Server to validate the metadata, based on the granule's data type.
B.5.1	Request Data Insert	EcInGran	EcDsScienceDataServer	CCS Middleware	Ingest requests that the received files for the data granule be inserted into the Science Data Server. An Insert request, containing the names of the files comprising the granule, is created. The structure of the Insert Request is hard-coded in the granule processor. The Science Data Server validates the metadata and determines the archived names of the files. Upon completion of the insert, the status is asynchronously reflected on the GUI monitor and control screen.
B.5.2	STMGT Store	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server requests that the granule's files be archived. The Storage Management Archive Server reads the inserted files directly from the Ingest staging disk on which they are residing. STMGT will calculate a checksum for a configurable percentage of files that do not yet have one. STMGT will verify the checksum value for the files based on the ChecksumonIngest flag. The correct archive is determined from information configured via the Storage Management Graphical User Interface (GUI). Files may be directed to different tapes based on observation time to optimize tape usage.
B.5.3	Adding a Granule to Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The validated metadata is parsed and added to the inventory of the Science Data Server, this includes checksum information when available.
B.6.1	Trigger Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of data granule, the AST_L1A:Insert or the AST_L1B:Insert event is triggered. The correct Subscription Server is determined from the Science Data Server configuration. Provided with the event triggering is the Universal Reference (UR) of the inserted granule.

Table 3.7.5.3-1. Component Interaction Table: ASTER GDS Tape Insertion (4 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
B.7.1	Retrieve Subscriptions	EcSbSubServer	Sybase ASE	CtLib	The Subscription Server queries the Sybase ASE database determining which subscriptions need to be activated or fired. Each query “hit” is an activated subscription and executes independently.
B.8.1	Build E-mail	EcSbSubServer	EcSbSubServer	Internal	The Subscription Server builds an email notification that the user’s subscription on the AST_L1A:Insert or AST_L1B:Insert event has been fired. This notification identifies the event, the subscription ID, the Granule UR that was inserted and the previously supplied User String.
B.8.2	Send Notification	EcSbSubServer	Science User	E-mail	The notice is e-mailed to the Science User. The e-mail address is what the user typed in for the subscription.

3.7.6 ASTER Backward Chaining Thread

This thread shows how the system supports requests from ECS users to produce data requiring a sequence of algorithms to be run.

3.7.6.1 ASTER Backward Chaining Thread Interaction Diagram - Domain View

Figure 3.7.6.1-1 depicts the ASTER Backward Chaining Interaction.

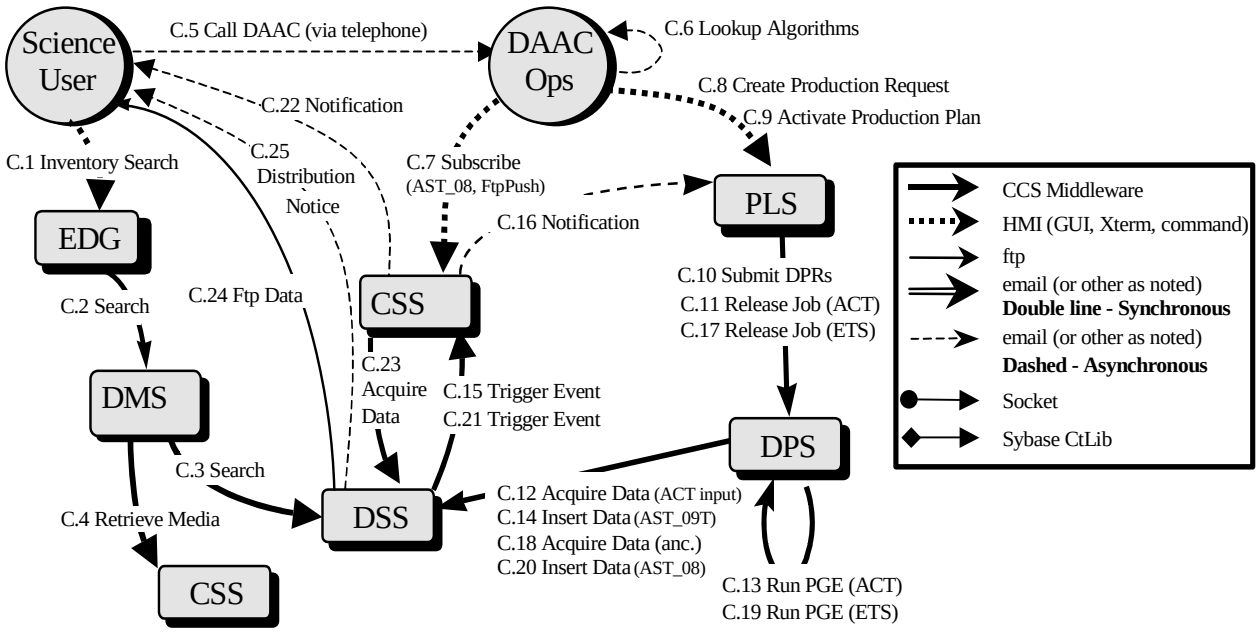

Figure 3.7.6.1-1. ASTER Backward Chaining Interaction Diagram

3.7.6.2 ASTER Backward Chaining Thread Interaction Table - Domain View

Table 3.7.6.2-1 depicts the Interaction - Domain View: ASTER Backward Chaining.

Table 3.7.6.2-1. Interaction Table - Domain View: ASTER Backward Chaining (1 of 5)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
C.1	Inventory Search	Science User	CLS (EDG)	None	None	Upon notification of data resulting from the Data Acquisition Request (DAR), the Science User looks up the data granule in order to determine its metadata characteristics.
C.2	Search	CLS (EDG)	DMS (V0 GTWAY)	None	None	The EOS Data Gateway (EDG) submits the Science User's search criteria to the V0 Gateway in Object Description Language (ODL) format, via a specific socket.

Table 3.7.6.2-1. Interaction Table - Domain View: ASTER Backward Chaining (2 of 5)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
C.3	Search	DMS (V0 GTWAY)	DSS (SDSRV)	None	None	The V0 Gateway translates the Search criteria from ODL to a query object (using GlParameters), and submits that query to the search service. The V0 Gateway optionally configures a chunk size, which determines how many granules are returned to the V0 Gateway at one time.
C.4	Retrieve Media	DMS (V0 GTWAY)	CSS (Configuration Registry)	None	None	The results of this search are returned synchronously. The media options are returned from the Communications Subsystem's Configuration Registry Server and the results are passed back to the EOS Data Gateway, which displays them to the Science User.
C.5	Call DAAC (via telephone)	Science User	DAAC User Services Representative	None	None	Upon determining the data take resulted in useful data, the Scientist decides to call the DAAC, requesting that a L2 Surface Temperature (AST_08) granule is produced from the AST_L1B data. The Scientist requests that the AST_08 data be shipped electronically to his/her workstation.
C.6	Lookup Algorithms	DAAC Production Planner	Technical Baseline	None	None	The DAAC Production Planner determines the process to take the AST_L1B data into AST_08 data. The process is a two-stage algorithm sequence: chaining the ACT and ETS algorithms.
C.7	Subscribe (AST_08, FtpPush)	DAAC Production Planner	CSS (SBSRV)	None	None	The DAAC Production Planner places a subscription for the Science User to receive the resultant AST_08 granule, via an FtpPush.
C.8	Create Production Request	DAAC Production Planner	PLS (PLANG)	None	None	The DAAC Production Planner creates Data Processing Requests (DPRs) for ACT and ETS Product Generation Executive (PGEs).

Table 3.7.6.2-1. Interaction Table - Domain View: ASTER Backward Chaining (3 of 5)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
C.9	Activate Production Plan	DAAC Production Planner	PLS (PLANG)	None	PGEs passed SSI&T-Plan already created.	The DAAC Production Planner activates a plan, which includes DPRs for ACT and ETS PGEs.
C.10	Submit DPRs	PLS (PLANG)	DPS (PRONG)	None	None	DPRs for ACT and ETS are submitted to the Data Processing Subsystem (DPS).
C.11	Release Job (ACT)	PLS (PLANG)	DPS (PRONG)	None	None	Since all inputs are available to run the ACT PGE, references to those input granules are passed to the Data Processing Subsystem, and the ACT job is released.
C.12	Acquire Data (ACT input)	DPS (PRONG)	DSS (SDSRV)	24 AST_ANC @4MB, 1 GDAS 0ZFH @4MB, 1 AST_L 1B @5 MB	AST_ANC & GDAS0ZFH data already inserted	The Data Processing Subsystem submits an acquire request for input granules, via an FtpPush, for input to the ACT PGE.
C.13	Run PGE (ACT)	DPS (PRONG)	DPS (PRONG)	AST_09T @9.7 MB	None	The ACT PGE runs, creating AST_09T granules.
C.14	Insert Data (AST_09T)	DPS (PRONG)	DSS (SDSRV)	None	AST_09T ESDT	The Data Processing Subsystem sends a request to the Data Server Subsystem to insert the newly created AST_09T granule.
C.15	Trigger Event	DSS (SDSRV)	CSS (SBSRV)	None	None	Trigger the AST_09T:Insert event.
C.16	Notification	CSS (SBSRV)	PLS (PLANG)	None	PLS Subscriptions for AST_09T :Insert event	Send direct notification to the Planning Subsystem (PLS), notifying that there is a newly inserted AST_09T granule. Notification message includes the Universal Reference (UR) of the AST_09T granule.

Table 3.7.6.2-1. Interaction Table - Domain View: ASTER Backward Chaining (4 of 5)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
C.17	Release Job (ETS)	PLS (PLANG)	DPS (PRONG)	None	None	The Planning Subsystem releases the job containing the ETS PGE.
C.18	Acquire Data (anc.)	DPS (PRONG)	DSS (SDSRV)	1 AST_ANC @722 MB	AST_ANC data already inserted	The Data Processing Subsystem submits an acquire request for the ancillary product, AST_ANC, via an FtpPush, for input to ETS PGE. Note that other input to ETS, AST_09T, is already available on the Data Processing Subsystem resources.
C.19	Run PGE (ETS)	DPS (PRONG)	DPS (PRONG)	1 AST_08 @2.3 MB, 1 AST_09T @6.6MB	None	The ETS PGE runs, creating both AST_08 and AST_05 data granules.
C.20	Insert Data (AST_08)	DPS (PRONG)	DSS (SDSRV)	None	AST_08 and AST_05 ESDTs	The Data Processing Subsystem sends a request to the Data Server Subsystem to insert the newly created AST_08 and AST_05 granules.
C.21	Trigger Event	DSS (SDSRV)	CSS (SBSRV)	None	None	Trigger the AST_08:Insert and AST_05:Insert events.
C.22	Notification	CSS (SBSRV)	Science User	None	None	Send an e-mail notification to the Science User, notifying that the AST_08 granule has been inserted. The Notification message includes the Universal Reference (UR) of the AST_08 granule.
C.23	Acquire Data	CSS (SBSRV)	DSS (SDSRV)	None	None	The Communications Subsystem Subscription Server (SBSRV) submits an acquire request, on behalf of the Science User, to have the AST_08 granule shipped, via an FtpPush, to the Scientist's workstation.
C.24	Ftp Data	DSS (SDSRV)	Science User	1 AST_08 @ 2.3 MB	None	The Data Server Subsystem transfers (via the FTP service) the AST_08 data to the Scientist's workstation.

Table 3.7.6.2-1. Interaction Table - Domain View: ASTER Backward Chaining (5 of 5)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
C.25	Distribution Notice	DSS (SDSRV)	Science User	None	None	The Data Server Subsystem emails notification to the Science User, notifying him/her of the presence of the AST_08 data on their workstation.

3.7.6.3 ASTER Backward Chaining Thread Component Interaction Table

Table 3.7.6.3-1 provides the Component Interaction: ASTER Backward Chaining.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (1 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.1.1	Startup EDG	Science User	iPlanet Web Server	Command	A Science User invokes a Netscape browser and navigates to the EOS Data Gateway home page.
C.1.2	Select Inventory Search, Provide Query constraints, Submit Query	Science User	iPlanet Web Server	GUI	The Science User provides search constraints for the AST_L1B granules desired. When query constraints are completed, the query is submitted.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (2 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.2.1	V0 Gateway Inventory Search	iPlanet Web Server	EcDmV0 ToEcsGa teway	ODL, over sockets	The EOS Data Gateway submits a search to the V0 Gateway, by converting the search criteria into an Object Description Language (ODL) structure and passing that structure to a socket provided by the V0 Gateway. The correct socket is determined from configuration information contained in the Valids file.
C.3.1	Establish ECS User	EcDmV0 ToEcsGa teway	EcMsAc RegUser Srvr	CCS Middleware	The V0 Gateway retrieves the User Profile using the ECS Authenticator from an Object Description Language (ODL) message, which includes an encrypted User ID and Password. The User Registration Server is replicated across DAACs, so the connection is made to the local User Registration Server.
C.3.2	Request Attribute Mapping	EcDmV0 ToEcsGa teway	EcDmDic tServer	CtLib (RWDBTool)	The V0 Gateway translates the V0 terms from ODL into ECS names for query submittal. The interface is directly to the Data Dictionary database. The database name is retrieved from a configuration file.
C.3.3	Connect to SDSRV	EcDmV0 ToEcsGa teway	EcDsSci enceData Server	CCS Middleware	The V0 Gateway first connects to the Science Data Server. The correct Science Data Server is determined from the configuration information.
C.3.4	SDSRV Query	EcDmV0 ToEcsGa teway	EcDsSci enceData Server	CCS Middleware	The V0 Gateway translates the query into a DsClQuery object. This object is handed to the search interface of the DsCl Earth Science Data Type (ESDT) ReferenceCollector. This search method is synchronous, so the results of the search are returned to the calling function. After the search, the V0 Gateway receives a list of Universal References (URs). Then it does an “Inspect” to the Science Data Server to get the metadata. It first performs a GetQueryableParameter to determine all attributes associated with each granule.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (3 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.3.5	Request Metadata	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server breaks down the query object and translates it into a sequence of calls to the inventory database. Resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the Query client.
C.3.6	Result Retrieval	iPlanet Web Server	EcDmV0ToEcsGateway	ODL, over Sockets	When the V0 Gateway gets the results, they are translated into Object Description Language (ODL), and passed back to the EOS Data Gateway. The correct socket for sending results to the EOS Data Gateway is the one used to submit the query. The EOS Data Gateway then displays the results of the query to the User.
C.4.1	Retrieve Media	EcDmV0ToEcsGateway	EcCsRegistry	CCS Middleware	The V0 Gateway retrieves the media from the Communications Subsystem‘s Registry Server. The media are translated into Object Description Language (ODL), and the ODL is put into the search result.
C.5.1	Startup SBSRV GUI	DAAC User Services Representative	EcSbGui	Xterm	After receiving a call from the user for AST_08 data made from the AST_L1B granules, a User Services Representative then calls the DAAC Production Planner, communicating the need for the AST_08 product. The DAAC Production Planner determines the sequence of algorithms required. The algorithms needed are determined from the Technical Baseline and a series of queries on the PDPS database. The DAAC User Services Representative invokes the Subscription Server Graphical User Interface (GUI) application.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (4 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.5.2	Create & Submit Subscription from GUI	DAAC User Services Representative	EcSbGui	Xterm	The DAAC User Services Representative represents him/herself as the Science User. The DAAC Operator brings up the Graphical User Interface (GUI) and clicks the button to create a new subscription. A list of events is then displayed from which the operator can choose to subscribe. The DAAC Operator selects the AST_08:Insert Event for subscription. Two actions, besides notification, are available from the Subscription Server at this time. FtpPush as a distribution mechanism is input via a GUI button. Other parameters required for FtpPush (including the Science User's host name, target directory, Ftp user name, and Ftp password) are input via the GUI. The other option is an Ftp Pull, also selected via a GUI button. There are no other parameters required for this option.
C.5.3	Retrieve Distribution Options	EcSbGui	EcCsRegistry	CCS Middleware	The Subscription Server GUI retrieves distribution options from the Communications Subsystem's Configuration Registry (FtpPush, FtpPull).
C.5.4	Submit Subscription	EcSbGui	EcSbSubServer	CCS Middleware	Submit the subscription to the Subscription Server. This is accomplished with the EcSbSubscription interface class in the EcSbCl library. The correct Subscription Server is determined via a Server Universal Reference (UR), declared in the configuration file.
C.5.5	Persist a Subscription	EcSbSubServer	Sybase ASE	CtLib	The subscription is stored in the Sybase ASE Database.
C.6.1	Startup Production Request Editor	DAAC Production Planner	EcPlPREditor_IF	GUI	The DAAC Planner invokes the Production Request Editor. The planner double clicks on the Planning Workbench icon.
C.6.2	Build Production Requests	DAAC Production Planner	EcPlPREditor_IF	GUI	The DAAC Planner creates Production Requests for the ACT and ETS algorithms. Algorithms (ACT and ETS) are selected, along with the time domain of the output (and input) data. Dependency of the ETS PGE on the ACT PGE, based on ACT output, is established.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (5 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.6.3	Connect to SBSRV	EcPlPREditor_IF	EcSbSubServer	CCS Middleware	The Editor connects to the subscription server in order to subscribe for notification of new AST_L1B granules.
C.6.4	Submit Subscription	EcPlPREditor_IF	EcSbSubServer	CCS Middleware	Submit the subscription to the Subscription Server. This is accomplished with the EcClSubscription interface class.
C.6.5	Store a Subscription	EcSbSubServer	Sybase ASE	CtLib	The Subscription is stored in the Sybase ASE Database.
C.6.6	Connect to SDSRV	EcPlPREditor_IF	EcDsScienceDataServer	CCS Middleware	Looking for input granules for the ACT PGE, the Production Request Editor first connects to the Science Data Server.
C.6.7	SDSRV Query	DpPrDssIF (Library function)	EcDsScienceDataServer	CCS Middleware	The DpPrDssIF creates an IF object to connect with the Science Data Server and performs the query.
C.6.8	Request Metadata	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server breaks down the Query object and translates it into a sequence of calls to the inventory database. Resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the Query client. Results are packaged in the ACT Data Processing Request (DPR).
C.6.9	Inspect Granule Value Parameters	EcPlPREditor_IF	EcDsScienceDataServer	CCS Middleware	The Editor checks the granule's metadata attributes (type, version, file size and temporal range) to establish job dependencies.
C.6.10	Connect to SBSRV	EcPlPREditor_IF	EcSbSubServer	CCS Middleware	The Editor connects to the Subscription Server to subscribe for notification of new AST_09 granules.
C.6.11	Submit Subscription	EcPlPREditor_IF	EcSbSubServer	CCS Middleware	Submit the subscription to the Subscription Server. This is accomplished with the EcClSubscription interface class.
C.6.12	Store a Subscription	EcSbSubServer	Sybase ASE	CtLib	The Subscription is stored in the Sybase ASE Database.
C.7.1	Startup Planning Workbench	DAAC Operator - Planner	EcPlWb	GUI	The DAAC Planner invokes the Planning workbench. The Planner double clicks on the Planning Workbench icon.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (6 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.7.2	Create a Plan	DAAC Operator - Planner	EcPlWb	GUI	The Planner interacts with the Planning Workbench Graphical User Interface (GUI) to create a plan with DPRs for the ACT and ETS PGEs.
C.7.3	Create DPR	EcPlWb	EcDpPrJobMgmt	CCS Middleware	The Production Planning Workbench sends the DPRID to the Data Processing Subsystem and whether the DPR is waiting for external data.
C.8.1	Submit DPRs (Create Job Box)	EcDpPrJobMgmt	AutoSys	JIL (AutoSys API)	The DPRs (one at a time - one for ACT and a dependent one for ETS PGE) in the plan are submitted to AutoSys by the Data Processing Subsystem for dependent execution. These jobs are dependent on input data.
C.9.1	Start Job Box	EcDpPrJobMgmt	AutoSys Event_daemon	Start Job Event sent to AutoSys via AutoSys API	The job containing the ACT PGE is released.
C.9.2	Initiate Job Processing	Event_daemon	EcDpPrEM	Command line	The job containing the ACT PGE begins processing.
C.9.3	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Data Processing Subsystem begins a session with the Science Data Server by connecting to acquire the ACT PGE. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
C.9.4	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager establishes the data context of the session with the Science Data Server by adding the PGE granule's UR of the PGE granule to the Earth Science Data Type (ESDT) ReferenceCollector.
C.9.5	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested PGE granule from the Sybase ASE/SQS database. The metadata for the PGE granule is passed back to the reference objects for each granule.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (7 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.9.6	Acquire Data	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests granules by submitting an acquire request for the PGE granule. The acquire request is for an FtpPush of all granules in the Earth Science Data Type (ESDT) ReferenceCollector. This request is synchronous (meaning the return of the "submit" call of the request contains the results of the request). This means the response is not sent until the PGE granule files have been transferred (via the Ftp service) to the Data Processing Subsystem disks. This request asks for no distribution notice to be emailed. The acquire request structure is hard-coded.
C.9.7	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a staging disk for the metadata file, which allocates space and passes back a reference to that disk space. The correct Staging Disk Server is determined from the Science Data Server configuration. The amount of staging disk to request is determined by the size of the metadata file.
C.9.8	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	The Science Data Server creates a file containing the Product Generation Executable (PGE) granule's metadata before passing to the Data Distribution Server.
C.9.9	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to the Data Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the acquire request are passed to the Data Distribution Server.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (8 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.9.10	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk for the granule files in the archive. This allocates space and passes back a reference to that disk space. The correct Staging Disk Server is determined from configuration information in Storage Management.
C.9.11	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests the Storage Management Request Manager to retrieve the Product Generation Executable (PGE) granule file archived. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. This means all files needed to fulfill the distribution request are on disk, and ready to be copied. This returns references to the files in the read-only cache. Locating the files may use the observation date when archive tape placement is optimized based on date.
C.9.12	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk areas.
C.9.13	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server into the Staging Disk Server staging disk areas.
C.9.14	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the media type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from configuration information within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original acquire request.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (9 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.9.15	Ftp Files	EcDsStFtpServer	Operating System Ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the actual Ftp of the PGE files to the Data Processing Subsystem.
C.10.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager begins a session with the Science Data Server by connecting. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
C.10.2	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager establishes the data context of the session with the Science Data Server by adding the input granules (1 AST_L1B, 1 GDAS0ZFH and 24 AST_ANC) to the session. The Granule UR of the input granule is added to the Earth Science Data Type (ESDT) ReferenceCollector. Note that this sequence is performed for each input granule, one at a time.
C.10.3	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested granule from the Sybase ASE/SQS database. The metadata for each granule is passed back to the reference objects for each granule.
C.10.4	Acquire Data	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests granules by submitting an acquire request for those granules. The acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is synchronous (meaning the return of the "submit" call of the request contains the results of the request). This means the response is not sent until the granule files have been transferred (via the Ftp service) to the Data Processing Subsystem disks. This request asks for no distribution notice to be emailed. The acquire request structure is hard-coded.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (10 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.10.5	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates staging disk for metadata files, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
C.10.6	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	For each granule referenced in the acquire request, the Science Data Server creates a file containing the granule's metadata before passing to the Data Distribution Server.
C.10.7	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to the Data Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the acquire request are passed to the Data Distribution Server.
C.10.8	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk for the granule files in the archive. This allocates space and passes back a reference to that disk space. The correct Staging Disk Server is determined from the information passed by the Science Data Server in the distribution request, which is the Science Data Server configuration. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (11 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.10.9	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests the Storage Management Request Manager to retrieve the granule file archived. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. This means all files needed to fulfill the distribution request are on disk and ready to be copied. The correct archive object to request is determined from the information provided by the Science Data Server in the distribution request. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
C.10.10	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
C.10.11	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server into the staging disk created by the Staging Disk Server.
C.10.12	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the media type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from configuration information within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original acquire request.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (12 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.10.13	Ftp Files	EcDsStFtpServer	Operating System Ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the actual Ftp of the files to the Data Processing Subsystem via the Operating System Ftp daemon.
C.11.1	Request Metadata Configuration File	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager gets the metadata configuration file of the output data's ESDT (AST_09T). Data type and version are from the PDPS database; the correct client name is from the configuration file.
C.11.2	Run PGE	EcDpPrRunPGE	PGE<ACT>	Command line	The ACT PGE is executed. Output files are placed in the output directory. The directory path is established by using a root, which was established by configuration and the specific directory by the job ID. This disk root is cross-mounted by the Data Processing Subsystem with the Data Server Subsystem's Science Data Server and Storage Management CSCIs. This is to ensure they are directly available to the Data Server Subsystem for archival.
C.12.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager begins a session with the Science Data Server by connecting.
C.12.2	Insert Data (AST_09T)	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests that the newly created files for the AST_09T granule are inserted into the Data Server. An Insert request, containing the names of the files comprising the granule, is created for each granule. The structure of the Insert Request is hard-coded. The Science Data Server validates metadata and determines the archived names of the files.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (13 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.12.3	STMGT Store	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server requests that the files be archived. The Archive Server must be able to read the inserted files directly from the Data Processing Subsystem disks they are residing on. STMGT will calculate a checksum for a configurable percentage of files that do not yet have one. STMGT will verify the checksum value for the files based on the ChecksumonIngest flag. The archive in which the data is stored is determined from information configured via the Storage Management Graphical User Interface (GUI). Files may be directed to different tapes based on observation time to optimize tape usage.
C.12.4	Adding a Granule to Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The validated metadata is parsed and added to the inventory of the Science Data Server, this includes checksum information when available.
C.13.1	Trigger Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of AST_09T the AST_09T:Insert event is triggered. The correct subscription server is determined from the Science Data Server configuration. Provided with the event triggering is the UR of the inserted granule.
C.13.2	Retrieve Subscriptions	EcSbSubServer	Sybase ASE	C7tLib	The Subscription Server queries the Sybase ASE database determining which subscriptions need to be activated, or fired. Each query “hit” is an activated subscription and executes independently.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (14 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.14.1	Asynchronous Direct Notification	EcSbSubServer	EcPlSubMgr	Message Passing Mechanism	The Subscription Server notifies PLS there is a new AST_09T granule available. The UR of the granule is passed in the notification to the user, along with a reference to the subscription that is being fulfilled. Direct Notification is to a Queue name (a Message Passing Mechanism) that PLS- Subscription Manager, provided when the subscription was submitted.
C.14.2	Connect to SDSRV	EcPlSubMgr	EcDsScienceDataServer	CCS Middleware	The Subscription Manager begins a session with the Science Data Server by connecting, in order to determine the use of the new granule. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
C.14.3	Add PGE granule's UR to Session	EcPlSubMgr	EcDsScienceDataServer	CCS Middleware	The Subscription Manager establishes the data context of the session with the Science Data Server by adding AST_09 granule's UR to the ESDT ReferenceCollector.
C.14.4	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested PGE granule from the Sybase ASE/SQS database. The metadata for the PGE granule is passed back to the reference objects for each granule.
C.14.5	Inspect Granule Value Parameters	EcPlSubMgr	EcDsScienceDataServer	CCS Middleware	The Subscription Manager checks the new granule's metadata attributes (type, version, file size and temporal range) to determine, which, if any, jobs can use it as input.
C.15.1	Release Job Request (ETS)	EcPlSubMgr	EcDpPrJobMgmt	CCS Middleware	Once it ensures the input granule is to be used to run the job containing ETS from the PDPS database, Planning sets the DPR completion state to "PENDING" and a thread in Job Management creates the job in AutoSys and runs it.
C.15.2	Initiate Job Processing	Event_daemon	EcDpPrEM	Command line	The job containing the ETS begins processing.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (15 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.15.3	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	Processing begins a session with the Science Data Server by connecting, in order to acquire the ETS PGE. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
C.15.4	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager establishes the data context of the session with the Science Data Server by adding the PGE granule's UR to the ESDT ReferenceCollector.
C.15.5	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested PGE granule from the Sybase ASE/SQS database. The metadata for the PGE granule is passed back to the reference objects for each granule.
C.15.6	Acquire Data	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests granules by submitting an Acquire request for the PGE granule. The Acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is synchronous (meaning the return of the "submit" call of the request contains the results of the request). This means the response is not sent until the PGE granule files have been transferred (via the Ftp service) to the DPS disks. This request asks for no distribution notice to be emailed. The Acquire request structure is hard-coded.
C.15.7	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a staging disk area for the metadata file, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (16 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.15.8	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	The Science Data Server creates a file containing the PGE granule's metadata before passing to the Data Distribution Server.
C.15.9	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to the Data Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the Acquire request are passed to the Data Distribution Server.
C.15.10	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk areas for the granule files in the archive. This allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
C.15.11	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests the Storage Management Request Manager to retrieve the PGE granule file archived. STMGT will verify the checksum for a configurable percentage of the files that have one. This results in the file being staged to read-only cache disks. This means all files needed to fulfill the distribution request are on disk, and ready to be copied. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
C.15.12	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
C.15.13	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's staging disk into the staging disk.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (17 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.15.14	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the Media Type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from the configuration within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original Acquire request.
C.15.15	Ftp Files	EcDsStFtpServer	Operating System ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the actual Ftp of the PGE files via the Operating System Ftp Daemon to the DPS.
C.16.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager begins a session with the Science Data Server by connecting. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
C.16.2	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager establishes the data context of the session with the Science Data Server by adding the input granule (1 AST_ANC) to the session. The Granule UR of the input granule is added to the ESDT ReferenceCollector. Note that this sequence is performed for each input granule, one at a time.
C.16.3	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested granule from the Sybase ASE/SQS database. The metadata for each granule is passed back to the reference objects for each granule.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (18 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.16.4	Acquire Data (anc.)	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests granules by submitting an Acquire request for those granules. The Acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is synchronous, meaning that the return of the "submit" call of the request contains the results of the request. This means that the response is not sent until the granule files have been transferred (via the Ftp service) to the DPS disks. This request asks for no distribution notice to be emailed. The Acquire request structure is hard-coded.
C.16.5	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a Staging Disk for metadata files, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
C.16.6	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	For each granule referenced in the Acquire request, the Science Data Server creates a file containing the granule's metadata before passing to Distribution.
C.16.7	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to Data Distribution. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the Acquire request are passed to the Data Distribution Server.
C.16.8	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates Staging Disk areas for the granule files in the archive. This allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (19 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.16.9	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests the Storage Management Request Manager to retrieve the granule file archived. STMGT will verify the checksum for a configurable percentage of the files that have one. This results in the file being staged to read-only cache disks. This means all files needed to fulfill the distribution request are on disk, and ready to be copied. The correct archive object to request is determined from the information provided by the Science Data Server in the distribution request. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
C.16.10	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
C.16.11	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's staging disk into the staging disk areas.
C.16.12	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the Media Type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from configuration within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original Acquire request.
C.16.13	Ftp Files	EcDsStFtpServer	Operating System Ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the Ftp of the files via the Operating System ftp daemon to the DPS.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (20 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.17.1	Request Metadata Configuration File	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager gets the metadata configuration file of the output data's ESDT (AST_08 and AST_05). Data type and version are from PDPS database; correct client name is from configuration file.
C.17.2	Run PGE (ETS)	EcDpPrRunPGE	PGE<ETS>	Command line	ETS is executed. Output files are placed in the output directory. The directory path is established by using a root, which was established by configuration and the specific directory by the job ID. This disk root is cross-mounted by DPS with the Science Data Server and Storage Management CSCIs. This is to ensure that they are directly available to the DSS, for archival.
C.18.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager begins a session with the Science Data Server by connecting.
C.18.2	Insert Data (AST_08)	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Execution Manager requests that the newly created files for the AST_08 and AST_05 granules are inserted into the Data Server. An Insert request, containing the names of the files comprising the granule, is created for each granule. The structure of the Insert Request is hard-coded. The Science Data Server validates metadata and determines the archived names of the files. Note that these inserts occur, one granule at a time.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (21 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.18.3	STMGT Store	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server requests that the files are archived. The archive server must be able to read the inserted files directly from the DPS disks that they are residing on. Files may be directed to different tapes based on observation time to optimize tape usage. STMGT will calculate a checksum for a configurable percentage of files that do not yet have one. STMGT will verify the checksum value for the files based on the ChecksumonIngest flag.
C.18.4	Adding a Granule to Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The validated metadata is parsed and added to the inventory of the Science Data Server, this includes checksum information when available.
C.19.1	Trigger Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of AST_08 the AST_08:Insert event is triggered. The correct subscription server is determined from the Science Data Server configuration. Provided with the event triggering is the UR of the inserted granule.
C.19.2	Retrieve Subscriptions	EcSbSubServer	Sybase ASE	CtLib	The Subscription Server queries the Sybase ASE database determining which subscriptions need to be activated, or fired. Each query “hit” is an activated subscription and executes independently.
C.20.1	Send Notification	EcSbSubServer	Science User	E-mail	The Subscription Server builds an email notification that the user’s subscription on the AST_08:Insert event has been fired. This notification identifies the event, the subscription ID, the Granule UR that was inserted and the previously supplied User String. The e-mail is sent to the Science User.
C.21.1	Connect to SDSRV	EcSbSubServer	EcDsScienceDataServer	CCS Middleware	To fulfill a standing order, the Subscription Server begins a session with the Science Data Server, on behalf of the subscription user. The correct Science Data Server is determined by the Granule UR provided with the event triggering.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (22 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.21.2	Add PGE granule's UR to Session	EcSbSubServer	EcDsScienceDataServer	CCS Middleware	The Subscription Server establishes the data context of the session with the Science Data Server by adding the input granules to the session. The Granule UR of each input granule is added to the ESDT ReferenceCollector.
C.21.3	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested granules from the Sybase ASE/SQS database. The metadata for each granule is passed back to the reference objects for each granule.
C.21.4	Acquire Data	EcSbSubServer	EcDsScienceDataServer	CCS Middleware	The Subscription Server fulfills the standing order for the AST_08 granule by submitting an Acquire request for the granule. The Acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is asynchronous, meaning that the return of the "submit" call of the request only contains the status of the request's submittal. This request asks for a distribution notice to be emailed to the client. The Acquire request structure was hard-coded within the subscription server.
C.21.5	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates staging disk areas for the metadata files, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
C.21.6	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	For each granule referenced in the Acquire request, the Science Data Server creates a file containing the granule's metadata before passing to Distribution.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (23 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.21.7	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to Data Distribution. The request includes, for the granule, a reference to the metadata file as well as the data file. Other parameters from the Acquire request are passed to the Data Distribution Server.
C.21.8	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk areas for the granule files in the archive. This allocates space and passes back a reference to that disk space. The amount of staging disk area to request is determined by the size of the metadata file.
C.21.9	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests Storage Management to retrieve the granule file that is archived. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. This means all files needed to fulfill the distribution request are on disk, and ready to be copied. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
C.21.10	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
C.21.11	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's Staging Disk into the staging disk.

Table 3.7.6.3-1. Component Interaction Table: ASTER Backward Chaining (24 of 24)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
C.21.12	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the Media Type handed to the resource factory (FtpPush, in this case). The correct ftp Server is determined from configuration within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original Acquire request.
C.22.1	Ftp Files	EcDsStFtpServer	Operating System ftp daemon (MODIS IT)	Ftp	The FTP Server performs the actual Ftp of the files via the Operating System Ftp Daemon to the MODIS IT.
C.23.1	Build Distribution Notice	EcDsDistributionServer	EcDsDistributionServer	Internal	The Data Distribution Server builds an email notification that the user's order has been fulfilled. This notification includes the media ID, type and format of the request, UR, type and file names and sizes for each granule as well as a DAAC configurable preamble. The notification will include checksum information for a DAAC configured list of users.
C.23.2	Send E-mail	EcDsDistributionServer	MODIS IT	E-mail	The Data Distribution Server sends the distribution notice to the user as determined from the Order via email. If this distribution notice fails, the notice is sent to a pre-configured default Email address for DAAC Distribution Technician parsing and forwarding.

3.7.7 ASTER QA Metadata Update Thread

This thread shows how the ECS supports updating the QA metadata of a specified granule.

3.7.7.1 ASTER QA Metadata Update Thread Interaction Diagram - Domain View

Figure 3.7.7.1-1 depicts the ASTER QA Metadata Update Interaction.

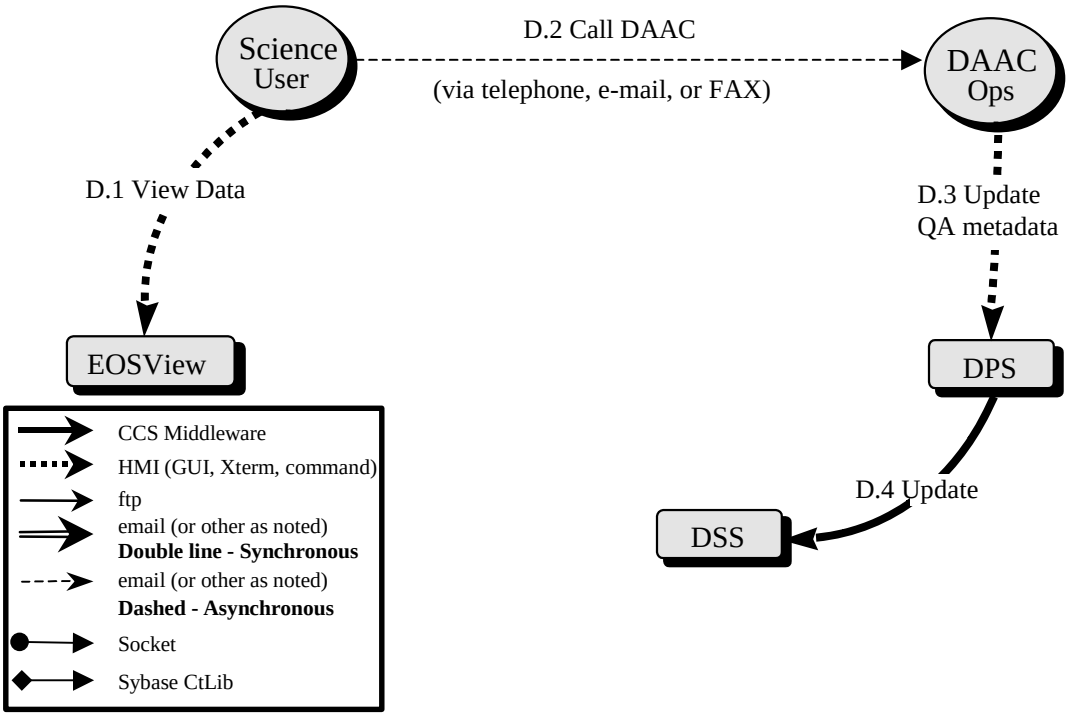

Figure 3.7.7.1-1. ASTER QA Metadata Update Interaction Diagram

3.7.7.2 ASTER QA Metadata Update Thread Interaction Table - Domain View

Table 3.7.7.2-1 provides the Interaction - Domain View: ASTER QA Metadata Update.

Table 3.7.7.2-1. Interaction Table - Domain View: ASTER QA Metadata Update (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
D.1	View Data	Science User	EOSView	None	None	Upon notification that the AST_08 has been placed on their workstation, the Scientist views the AST_08 data with EOSView.
D.2	Call DAAC	Science User	DAAC Science Data Specialist	None	None	The Scientist QA's the produced data. He/She notifies the DAAC, informing the DAAC Science Data Specialist that the granule's QA flags should be updated.

Table 3.7.7.2-1. Interaction Table - Domain View: ASTER QA Metadata Update (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
D.3	Update QA Metadata	DAAC Science Data Specialist	DPS (QA Monitor)	None	None	The DAAC Science Data Specialist uses the QA Monitor tool to update the Science QA metadata of the granule.
D.4	Update	DPS (QA Monitor)	DSS (SDSRV)	None	None	The QA Monitor invokes the Update service offered by the Science Data Server on the granule. The QA Monitor passes the Scientist's requested QA values to the DSS for permanent updating of the granule's metadata.

3.7.7.3 ASTER QA Metadata Update Thread Component Interaction Table

Table 3.7.7.3-1 provides the Component Interaction: ASTER QA Metadata Update.

Table 3.7.7.3-1. Component Interaction Table: ASTER QA Metadata Update (1 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
D.1.1	Invoke EOSView	Science User	EOSView	Command	A Science User begins the EOSView application. The user double clicks the EOSView icon.
D.1.2	Display AST_08 Data	Science User	EOSView	GUI	The Science User specifies which file to display and sets visualization parameters. The data file is now displayed for the user.
D.3.1	Invoke DAAC QA Monitor	DAAC Science Data Specialist	EcDpPrQaMonitorGUI	Command	The DAAC Science Data Specialist begins the QA Monitor application.
D.3.2	Establish QA values	DAAC Science Data Specialist	EcDpPrQaMonitorGUI	GUI	The DAAC Science Data Specialist establishes the updated values for selected metadata fields, for the selected granules. Granules are selected by data type and temporal range. The fields to update are hard wired.

Table 3.7.7.3-1. Component Interaction Table: ASTER QA Metadata Update (2 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
D.3.3	Connect to SDSRV	EcDpPrQaMonitorGUI	EcDsScienceDataServer	CCS Middleware	The QA Monitor begins a session with the Science Data Server by connecting to find granules to be updated. The correct Science Data Server is determined by using the Server UR indicated in the configuration, based on data type. This is pertinent if there are multiple Science Data Servers in use at one DAAC in one mode.
D.3.4	SDSRV Query	EcDpPrQaMonitorGUI	EcDsScienceDataServer	CCS Middleware	QA Monitor builds a DsClQuery object. This object is handed to the Search interface of the DsCl ESDT ReferenceCollector. This Search method is synchronous, so the results of the search are returned to the calling function. After the search, the QA Monitor receives a list of URs. Then it does an "Inspect" to the Science Data Server to get the metadata. It first performs a GetQueryableParameter to determine all attributes associated with each granule.
D.3.5	Request Metadata	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server breaks down the query object and translates it into a sequence of calls to the inventory database. Resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the Query client.
D.3.6	Inspect Granule Value Parameters	EcDpPrQaMonitorGUI	EcDsScienceDataServer	CCS Middleware	The QA Monitor inspects each resultant granule for the values of displayed metadata fields.
D.3.7	Select granules to update	DAAC Science Data Specialist	EcDpPrQaMonitorGUI	GUI	The DAAC Science Data Specialist selects granules for updating.
D.4.1	Update Granule metadata	EcDpPrQaMonitorGUI	EcDsScienceDataServer	CCS Middleware	The QA Monitor submits an update request for the granules to be updated (one granule at a time). The structure of the Update request is hard-coded.
D.4.2	Update a metadata inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server updates the metadata inventory attributes for the granules being updated.

3.7.8 ASTER On-Demand High Level Production Thread From the EDG

This thread shows how the ECS supports users request for On-Demand High Level production through the EDG.

The ASTER On Demand High Level Processing scenario occurs every time a user places a request for one of the pre-defined set of ASTER High Level Products. The user may want to produce a high level product with a different set of parameters or use a Standard L1B granule as starting input. In either case, the user selects the granule to be used and/or the additional parameters to generate the High Level product. Then the user submits a request for the system to create this High Level product.

3.7.8.1 ASTER On-Demand High Level Production Thread Interaction Diagram - Domain View

Figure 3.7.8.1-1 is the ASTER On-Demand High Level Production Interaction diagram.

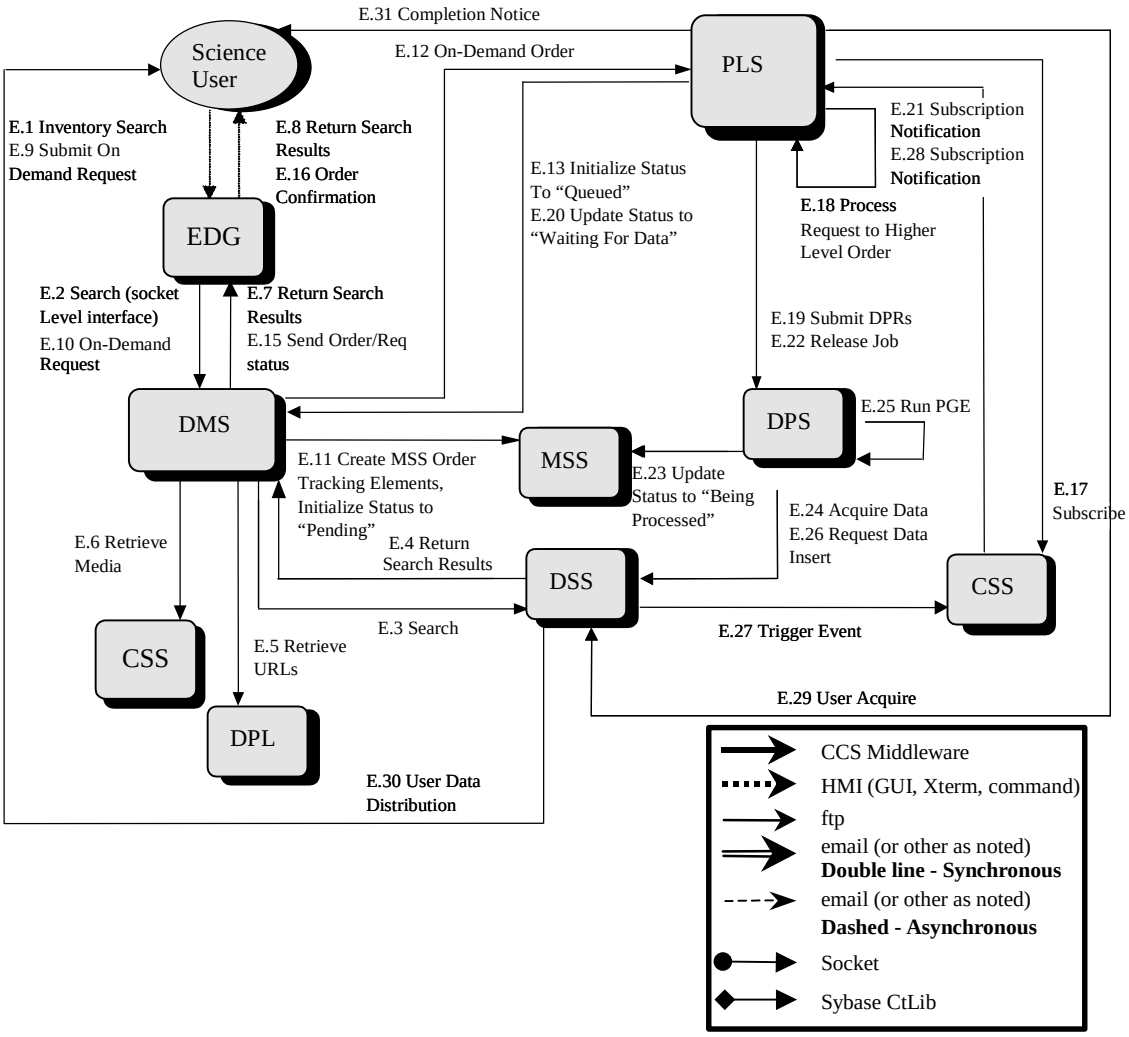

Figure 3.7.8.1-1. ASTER On-Demand High Level Production Interaction Diagram

3.7.8.2 ASTER On-Demand High Level Production Thread Interaction Table - Domain View

Table 3.7.8.2-1 provides the Interaction - Domain View: ASTER On-Demand High Level Production.

Table 3.7.8.2-1. Interaction Table - Domain View: ASTER On-Demand High Level Production (1 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
E.1	Inventory Search	Science User	EDG	None	None	A Scientist searches the ECS holdings for ASTER products that are over his/her area of study.
E.2	Search	EDG	DMS (V0 GTWAY)	None	None	The EDG submits the Science User's search criteria to the V0 Gateway in ODL format, via a specific socket.
E.3	Search	DMS (V0 GTWAY)	DSS	None	None	The V0 Gateway translates the Search criteria from ODL to a query object (using GlParameters), and submits that query to the Search service.
E.4	Return Search Results	DSS	DMS (V0 GTWAY)	None	None	The DSS returns search results to the V0 Gateway.
E.5	Retrieve URLs	DMS (V0 GTWAY)	DPL	None	None	The V0 Gateway sends a request for URLs to the Data Pool Subsystem.
E.6	Retrieve Media	DMS (V0 GTWAY)	CSS (Registry)	None	None	The results of this Search are returned synchronously. The media options are returned from the CSS Registry Server and the results are passed back to the EDG, which displays them to the Science User.
E.7	Return Search Results	DMS (V0 GTWAY)	EDG	None	None	The V0 Gateway returns search results with media options to the EDG.

Table 3.7.8.2-1. Interaction Table - Domain View: ASTER On-Demand High Level Production (2 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
E.8	Return Search Results	EDG	Science User	None	None	The EDG returns search results to the User.
E.9	Submit On-Demand Request	Science User	EDG	None	None	The scientist desires a product that does not exist in the archive. He/she picks the URs of the inputs and creates an On-demand Production Request via the EDG.
E.10	On-Demand Request	EDG	DMS (V0 GTWAY)	This interface is actually accomplished via a synchronous ODL message	None	All the user's selections for the On-demand production request are passed to the V0 Gateway.
E.11	Create MSS Order Tracking Elements Initialize status to "Pending"	DMS (V0 GTWAY)	MSS	None	None	The V0 Gateway creates order-tracking elements.
E.12	On-Demand Order	DMS (V0 GTWAY)	PLS	None	None	The V0 Gateway passes the on-demand order to the PLS with orderId and requestID.
E.13	Initialize Status (to "Queued")	PLS	MSS	None	None	The status of the On-demand request is initialized to "Queued."
E.14	Order/Req Status returned	PLS	DMS (V0 GTWAY)	None	None	The order status and request status are returned to the V0 Gateway.
E.15	Send Order/req status	DMS (V0 GTWAY)	EDG	None	None	The V0 Gateway sends order status back to the EDG.
E.16	Order Confirmation	EDG	Science User	None	None	The EDG notifies the science user the request has been submitted.

Table 3.7.8.2-1. Interaction Table - Domain View: ASTER On-Demand High Level Production (3 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
E.17	Subscribe	PLS	CSS (SBSRV)	None	None	The PLS places subscriptions on those inputs that have not been archived. The PLS also places a subscription on the output products desired by the user.
E.18	Process request to high level order	PLS	PLS	None	None	Process the request to a higher-level order.
E.19	Submit DPRs	PLS (ODPRM)	DPS	None	None	DPR(s) for PGEs to produce the requested products are created and submitted to the DPS.
E.20	Update Status (to "Waiting for Data")	PLS	MSS	None	None	The PLS sets the status of the On-demand request to "Waiting for Data."
E.21	Subscription Notification	CSS (SBSRV)	PLS	None	None	The CSS notifies the PLS when data is available in the archive by a subscription notification.
E.22	Release Job	PLS	DPS	None	None	Once all inputs are available to run the PGE, references to those input granules are passed to the DPS, and the jobs that make up the On-demand Production Request are released.
E.23	Update Status (to "Being Processed")	DPS	MSS	None	None	The DPS updates the status of the On-demand request as it marches through the various stages of processing.
E.24	Acquire Data	DPS	DSS	None	None	The DPS submits an acquire request for input granules, via FtpPush, for input to PGEs.
E.25	Run PGE	DPS	DPS	None	None	The PGEs run, creating the desired products.

Table 3.7.8.2-1. Interaction Table - Domain View: ASTER On-Demand High Level Production (4 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
E.26	Request Data Insert	DPS	DSS	None	None	Archive the newly created product granules. Note that if the PGE run was a precursor PGE (meaning a PGE that has to be run for the inputs of the PGE that actually produces the desired product) then the DPS inserts the granule such that it is deleted in a configurable time period.
E.27	Trigger Event	DSS	CSS (SBSRV)	None	None	Trigger insert of desired product data. Since the PLS placed the subscription for the desired product, then the PLS receives the Subscription Notification (as in step E.21).
E.28	Subscription Notification	CSS (SBSRV)	PLS	None	None	The CSS notifies the PLS when data is available in the archive by a subscription notification.
E.29	User Acquire	PLS	DSS	None	None	The PLS submits a “user acquire” request, to request that DSS transfers the product(s) to the user who made the On-demand request.
E.30	User Data Distribution	DSS	Science User	None	None	The DSS acquires the data for the user. It is sent via Ftp or placed on the requested media.
E.31	Completion Notice	PLS	Science User	None	None	Send email notification to the Science User, notifying that the requested product(s) has been produced.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (1 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.1.1	Startup EDG	Science User	Netscape	Command	A Science User invokes a Netscape browser and navigates to the EOS Data Gateway home page.
E.1.2	Select Inventory Search, Provide Query constraints, Submit Query	Science User	Netscape	GUI	The Science User provides search constraints and the products desired. When query constraints are completed, the query is submitted.
E.2.1	V0 GTWAY Inventory Search	Netscape	EcDmV0 ToEcsGa teway	ODL, over sockets	The EOS Data Gateway submits a search to the V0 Gateway, by converting the search criteria into an Object Description Language (ODL) structure and passing that structure to a socket provided by the gateway. The correct socket is determined from configuration information contained in the Valids file.
E.3.1	Establish ECS User	EcDmV0 ToEcsGa teway	EcMsAc RegUser Srvr	CCS Middleware	The V0 Gateway retrieves the User Profile using ECS Authenticator from the ODL message, which includes an encrypted User ID and Password. The User Registration database is replicated across DAACs, so the connection is made to the local User Registration Server.
E.3.2	Request Attribute Mapping	EcDmV0 ToEcsGa teway	EcDmDic tServer	CtLib (RWDBTool)	The V0 Gateway translates the V0 terms from ODL into ECS names for query submittal. The interface is directly to the Data Dictionary database. The database name is retrieved from a configuration file.
E.3.3	Connect to SDSRV	EcDmV0 ToEcsGa teway	EcDsSci enceData Server	CCS Middleware	The V0 Gateway first connects to the Science Data Server. The correct Science Data Server is determined from the configuration information.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (2 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.3.4	SDSRV Query	EcDmV0 ToEcsGa teway	EcDsSci enceData Server	CCS Middleware	The V0 Gateway translates the query into a DsClQuery object. This object is handed to the Search interface of the DsCl Earth Science Data Type (ESDT) ReferenceCollector. This Search method is synchronous, so the results of the search are returned to the calling function. After the search, the V0 Gateway receives a list of URs. Then it does an "Inspect" to the Science Data Server to get the metadata. It first performs a GetQueryableParameter to determine all attributes associated with each granule.
E.3.5	Request Metadata	EcDsSci enceData Server	Sybase/S QS	CtLib	The Science Data Server breaks down the Query object and translates it into a sequence of calls to the inventory database. The resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the Query client.
E.3.6	Result Retrieval	Netscape	EcDmV0 ToEcsGa teway	ODL, over Sockets	When the V0 Gateway gets the results, they are translated into ODL, and passed back to the EDG. The correct socket for sending results to the EDG is the one used to submit the query. The EDG then displays the results of the query to the user.
E4.1	Return Search Result	EcDsSci enceData Server	EcDmV0 ToEcsGa teway	CCS Middleware	The Science Data Server returns the matched granules (URs) to the V0 Gateway.
E.5.1	Retrieve URLs	EcDmV0 ToEcsGa teway	Sybase	Ctlib	The V0 Gateway sends a request to the Data Pool for the URLs of the granules to be retrieved.
E.6.1	Retrieve Media	EcDmV0 ToEcsGa teway	EcCsReg istry	CCS Middleware	The V0 Gateway retrieves the media options from the Registry Server. The media options are translated into ODL, and the ODL is put into the search result.
E.6.2	Retrieve Subsetting Options	EcDmV0 ToEcsGa teway	EcCsReg istry	CCS Middleware	The V0 Gateway retrieves the subsetting options from the Registry Server. The subsetting options are translated into ODL, and the ODL is put into the search results.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (3 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.7.1	Return Search Results	EcDmV0To EcsGateway	EDG	ODL, over Socket	The V0 Gateway returns the granule with their media options and subsetting options back to the EDG.
E.8.1	Return Search Results	EDG	Science User	Web Page	The EDG returns the result back to the science users in the forms of HTML pages.
E.9.1	Submit On-Demand Request	Science User	EDG	Web Page	The Science User makes a selection for his/her desired product(s) on the EDG. When finished, the user submits his/her request.
E.10.1	Create On-Demand Form	EcDmV0To EcsGateway	EcDmV0To EcsGateway	None	The V0 Gateway creates the user request(s) in the form of a GI Parameter List.
E.10.2	Pass On-demand Form	EcDmV0To EcsGateway	EcPlOdMgr (ODPRM)	CCS Middleware	The V0 Gateway makes call to the On-Demand Production Request Manager (ODPRM) and passes the GI Parameter List, which has the user request, on to the ODPRM.
E.10.3	Return Order ID	EcPlOdMgr (ODPRM)	EcDmV0To EcsGateway	CCS Middleware	The ODPRM generates an order ID for the user request and passes it back to the V0 Gateway.
E.10.4	Connect to SBSRV	EcPlOdMgr (ODPRM)	EcSbSubSe rver	CCS Middleware	The ODPRM connects to the subscription server to subscribe for notification of new desired input granules. The correct Subscription Server is determined from the subscribe advertisement.
E.10.5	Submit Subscription	EcPlOdMgr (ODPRM)	EcSbSubSe rver	CCS Middleware	Submit the subscription to the Subscription Server. This is accomplished with the EcClSubscription interface class.
E.10.6	Store a Subscription	EcSbSubSe rver	Sybase	CtLib	The Subscription is stored in the Sybase Database.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (4 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.10.7	Connect to SDSRV	EcPlOdMgr (ODPRM)	EcDsScienceDataServer	CCS Middleware	Looking for input granules for the PGE, the ODPRM first connects to the Science Data Server. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
E.10.8	SDSRV Query	DpPrDssIF (Library Function)	EcDsScienceDataServer	CCS Middleware	The DpPrDssIF creates an IF object to connect with the Science Data Server and performs the query.
E.10.9	Request Metadata	EcDsScienceDataServer	Sybase/SQS	CtLib	The Science Data Server breaks down the query object and translates it into a sequence of calls to the inventory database. The resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the query client.
E.10.10	Inspect Granule Value Parameters	EcPlOdMgr (ODPRM)	EcDsScienceDataServer	CCS Middleware	The ODPRM checks the granule's metadata attributes (type, version, file size and temporal range) to establish job dependencies. References to desired granules are packaged in the DPRs.
E.11.1	Create MSS Order Tracking Elements	EcDmV0ToEcsGateway	AutoSys	CCS Middleware	The MSS order-tracking elements are created.
E.12.1	On-Demand Order	EcDmV0ToEcsGateway	EcPlOdMgr	CCS Middleware	The V0 Gateway sends the GlParameterList, the orderID, reqID to the On-demand Production Request Manager.
E.13.1	Initialize Status (to "Queued")	EcPlOdMgr	AutoSys	CCS Middleware	The status of the on-demand request is initialized to "Queued."
E.14.1	Order/Req Status returned	EcPlOdMgr	EcDmV0ToEcsGateway	CCS Middleware	The On-demand Production Request Manager returns the order status and request status back to the V0 Gateway.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (5 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.15.1	Send Order status	EcDmV0To EcsGatway	EDG	ODL	The V0 Gateway sends the order/request status back to the EDG.
E.16.1	Order Confirmation	EDG	Science User	Web Page	The EDG returns a web page to the science user with the order/request status of the request.
E.17.1	Connect to SBSRV	EcPlOdMgr (ODPRM)	EcSbSubSe rver	CCS Middleware	The On-demand Production Request Manager (ODPRM) connects to the subscription server to subscribe for notification of new desired output granules.
E.17.2	Submit Subscription	EcPlOdMgr (ODPRM)	EcSbSubSe rver	CCS Middleware	Submit the subscription to the Subscription Server. This is accomplished with the EcClSubscription interface class.
E.17.3	Store a Subscription	EcSbSubSe rver	Sybase	Ctlib	The subscription is stored in the Sybase Database.
E.18.1	Process request	EcPlOdMgr	EcPlOdMgr	None	The ODPRM processes the request to a higher-level order.
E.19.1	Create DPR	EcPlOdMgr	EcDpPrJob Mgmt	CCS Middleware	The ODPRM sends to the DPS the DPRID, a list of predecessor DPRs, and whether the DPR is waiting for external data.
E.20.1	Update Status (to “Waiting for Data”)	EcPlOdMgr (ODPRM)	AutoSys	CCS Middleware	The status of the on-demand request is updated to “Waiting for Data.”
E.21.1	Subscription Notification	EcSbSubSe rver	EcPlSubMgr	CCS Middleware	The subscriptions are submitted for each data type individually.
E.22.1	Release Job	EcPlOdMgr	EcDpPrJob Mgmt	CCS Middleware	The ODPRM tells the Job Manager to release the on-demand job, using the appropriate input granules.
E.22.2	Submit DPRs	EcDpPrJob Mgmt	AutoSys	JIL	The DPR (containing the BTS PGE) in the updated plan is submitted to the AutoSys.
E.22.3	Force Start Job	EcDpPrJob Mgmt	Event_daem on	CCS Middleware	The on-demand Job is released.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (6 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.22.4	Initiate Job Processing	Event_daemon	EcDpPrEM	Command line	The on-demand job begins processing.
E.22.5	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Data Processing Execution Manager (DPEM) begins a session with the Science Data Server by connecting to acquire the on-demand PGE. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
E.22.6	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM establishes the data context of the session with the Science Data Server by adding the PGE granule's UR to the ESDT ReferenceCollector.
E.22.7	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested PGE granule from the Sybase/SQS database. The metadata for the PGE granule is passed back to the reference objects for each granule.
E.22.8	Acquire Data	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM requests granules by submitting an acquire request for the PGE granule. The acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is synchronous, meaning the return of the submit call of the request contains the results of the request. This means the response is not sent until the PGE granule files have been transferred (via the Ftp service) to the DPS disks. This request asks for no distribution notice to be emailed. The acquire request structure is hard-coded.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (7 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.22.9	Create Staging Disk	EcDsScienceDataServer	EcDsStStagingDiskServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a staging disk for the metadata file, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
E.22.10	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	The Science Data Server creates a file containing the PGE granule's metadata before passing it to the Data Distribution Server.
E.22.11	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to Data Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the acquire request are passed to the Data Distribution Server.
E.22.12	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk for the granule files in the archive. This allocates space and passes back a reference to that disk space. The correct staging disk server is determined from the information passed by the Science Data Server in the distribution request, which was the Science Data Server configuration. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (8 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.22.13	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests that Storage Management retrieve the archived PGE granule file. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. This means that all files needed to fulfill the distribution request are in read only cache and ready to be linked. The correct archive object to request is determined from the information provided by the Science Data Server in the distribution request. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
E.22.14	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
E.22.15	Claim Ownership	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server claims ownership of the staging disk created by the Science Data Server by sending a request to the Storage Management Request Manager.
E.22.16	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's staging disk into the Storage Management staging disk.
E.22.17	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the media type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from the configuration within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original acquire request.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (9 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.22.18	Ftp Files	EcDsStFtpServer	Operating System Ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the actual Ftp of the PGE files via the Operating System Ftp daemon to the DPS.
E.23.1	Update Status	EcDpPrEM	EcMsAcOrderSrvr	CCS Middleware	The Data Processing Execution Manager (DPEM) updates the status as the PGE(s) go through the various states. The status of each On-demand PGE goes from "Waiting for Data" to "Waiting for Processing Resources" to "Started Processing" to "Completed."
E.24.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM begins a session with the Science Data Server by connecting. The correct Science Data Server is identified from information retrieved from the PDPS database (PlSdsrvString table).
E.24.2	Add PGE granule's UR to Session	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Data Processing Execution Manager (DPEM) establishes the data context of the session with the Science Data Server by adding the input granules to the session. The granule UR of the input granule is added to the ESDT ReferenceCollector. Note that this sequence is performed for each input granule, one at a time.
E.24.3	Retrieve Granule Metadata from Inventory	EcDsScienceDataServer	Sybase/SQS	CtLib	The Science Data Server completes establishing the data context by retrieving the metadata for the requested granule from the Sybase/SQS database. The metadata for each granule is passed back to the reference objects for each granule.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (10 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.24.4	Acquire Data	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM requests granules by submitting an acquire request for those granules. The acquire request is for an FtpPush of all granules in the ESDT ReferenceCollector. This request is synchronous (meaning the return of the submit call of the request contains the results of the request). This means the response is not sent until the granule files have been transferred (via the Ftp service) to the DPS disks. This request asks for no distribution notice to be emailed. The acquire request structure is hard-coded.
E.24.5	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a staging disk for metadata files, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.
E.24.6	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	For each granule referenced in the acquire request, the Science Data Server creates a file containing the granule's metadata before passing to the Distribution Server.
E.24.7	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to the Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the acquire request are passed to the Data Distribution Server.
E.24.8	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disks for the granule files in the archive. This allocates space and passes back a reference to that disk space. The correct staging disk server is determined from the information passed by the Science Data Server in the distribution request, which was the Science Data Server configuration. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (11 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.24.9	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests that Storage Management retrieve the archived granule file. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. This means that all files needed to fulfill the distribution request are on disk, and ready to be linked. The correct archive object to request is determined from the information provided by the Science Data Server in the distribution request. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
E.24.10	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
E.24.11	Claim Ownership	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server claims ownership of the staging disk created by the Science Data Server by sending a request to the Storage Management Request Manager.
E.24.12	Link files to Staging Disk	EcDsDistributionServer	EcDsStStagingDiskServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's staging disk into the Storage Management staging disk.
E.24.13	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the media type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from the configuration within the resource factory. The files, host, location, username and password are all determined from the information provided in the original acquire request.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (12 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.24.14	Ftp Files	EcDsStFtpServer	Operating System Ftp daemon (EcDpPrEM)	Ftp	The FTP Server performs the actual Ftp of the files via the Operating System Ftp daemon to the DPEM.
E.25.1	Request Metadata Configuration File	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM gets the metadata configuration file of the output data's ESDT. Data type and version are from the PDPS database, correct client name is from the configuration file.
E.25.2	Run PGE	EcDpPrRunPGE	PGE	Command line	The PGE is executed. Output files are placed in the output directory. The directory path is established by using a root, which was established by configuration, and the specific directory by the job ID. This disk root is cross-mounted by DPS with the Science Data Server and Storage Management CSCIs. This is to ensure they are directly available to the DSS for archival.
E.26.1	Connect to SDSRV	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The DPEM begins a session with the Science Data Server by connecting.
E.26.2	Request Data Insert	EcDpPrEM	EcDsScienceDataServer	CCS Middleware	The Data Processing Execution Manager requests that the newly created files for the output granule are inserted into the Data Server. An insert request, containing the names of the files comprising the granule, is created for each granule. The structure of the insert request is hard-coded. The Science Data Server validates metadata and determines the archived names of the files. Note that these inserts occur one granule at a time.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (13 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.26.3	STMGT Store	EcDsScience DataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server requests that the files be archived. The archive server must be able to read the inserted files directly from the DPS disks they are residing on. Files may be directed to different tapes based on observation time to optimize tape usage. STMGT will calculate a checksum for a configurable percentage of files that do not yet have one. STMGT will verify the checksum value for the files based on the ChecksumonIngest flag.
E.26.4	Adding a Granule to Inventory	EcDsScience DataServer	Sybase/SQS	CtLib	The validated metadata is parsed and added to the inventory of the Science Data Server, this includes checksum information when available.
E.27.1	Trigger Event	EcDsScience DataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of AST_04 the AST_04:Insert event is triggered. The correct subscription server is determined from the Science Data Server configuration. Provided with the event triggering is the UR of the inserted granule.
E.27.2	Retrieve Subscriptions	EcSbSubServer	Sybase	CtLib	The Subscription Server queries the Sybase database determining which subscriptions need to be activated or fired. Each query “hit” is an activated subscription and executes independently.
E.28.1	Subscription Notification	EcSbSubServer	EcPlSubMgr	Message Passing Mechanism	The subscriptions are submitted for each data type individually.
E.29.1	User Acquire	EcPlOdMgr (ODPRM)	EcDsScience DataServer	CCS Middleware	The On-Demand Production Request Manager (ODPRM) receives the subscription notification and sends a request to the Science Data Server to distribute the on-demand product to the requester.

Table 3.7.8.3-1. Component Interaction Table: ASTER On-Demand High Level Production (14 of 14)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
E.30.1	User Data Distribution	EcDsScienceDataServer	Science User	Ftp	Data is sent to the user on the requested media. This can be via Ftp or it can be on tape.
E.31.1	Completion Email	EcPlOdMgr (ODPRM)	Science User	E-mail	Email is sent from the On-Demand Production Request Manager (ODPRM) to the user indicating (after all on-demand DPRs for this request have completed) that his/her on-demand request has been satisfied.

3.7.9 ASTER On-Demand Non-Standard L1B Production Thread

This thread shows how the ECS supports users request for On-Demand production of non-standard L1B data products.

ASTER non-standard L1B processing allows the user to request an L1B data product to be generated using nonstandard input parameters. The processing of a non-standard L1B product is conducted at the GDS in Japan. The user submits an ECS request by making use of the ODFRM On-Demand Form web page, which is supported by the CLS. This web page enables the user to choose from a list of non-standard parameters, and ECS parses the information and sends the request to GDS via the ASTER gateway. The final product is delivered on tape to the ECS from the GDS in Japan. The final product is archived at the ECS, and the user is notified regarding the final product availability.

3.7.9.1 ASTER On-Demand Non-Standard L1B Thread Interaction Diagram - Domain View

Figure 3.7.9.1-1 depicts the ASTER On-Demand Non-Standard L1B Interaction.

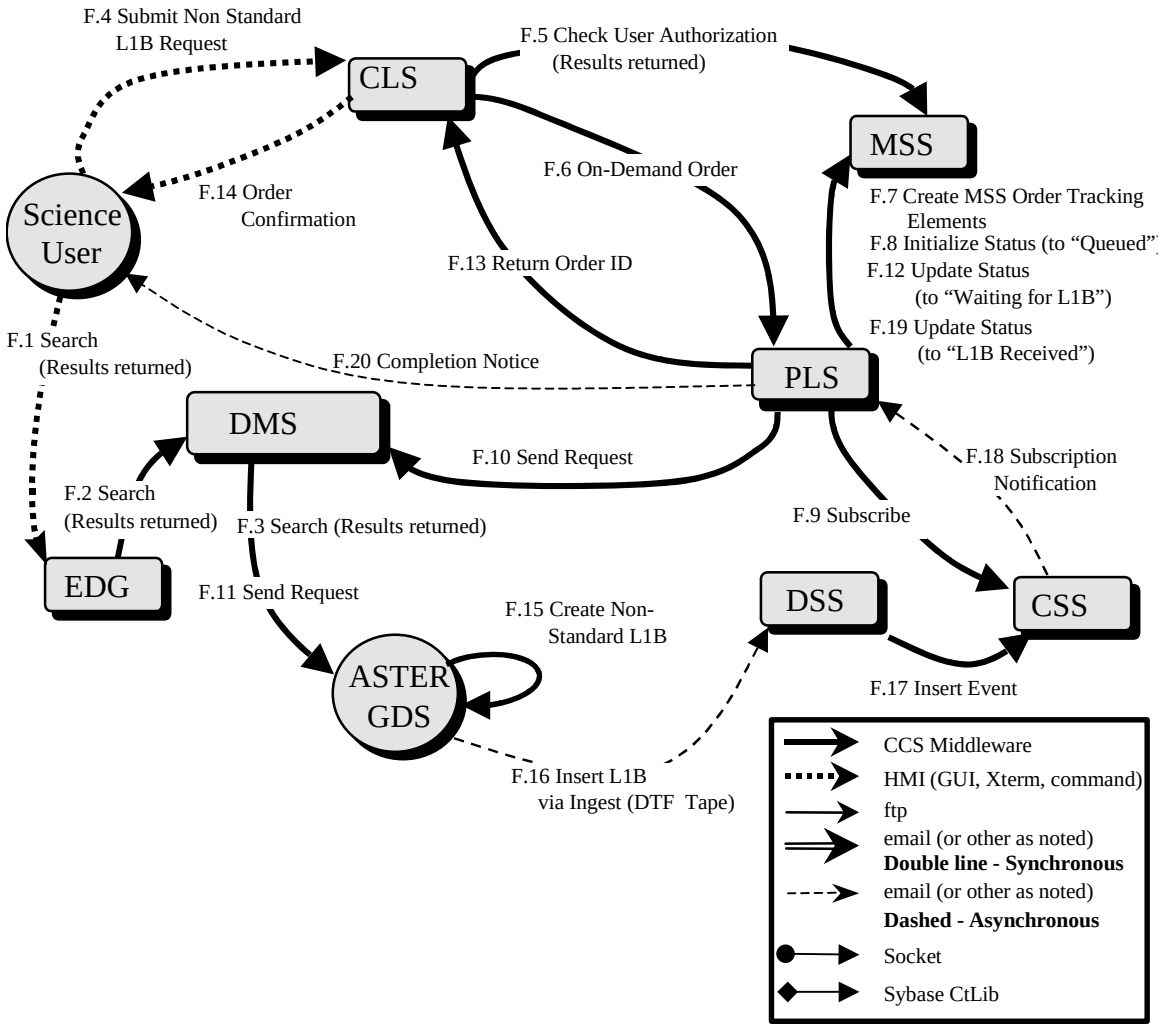

Figure 3.7.9.1-1. ASTER On-Demand Non-Standard L1B Interaction Diagram

3.7.9.2 ASTER On-Demand Non-Standard L1B Thread Interaction Table - Domain View

Table 3.7.9.2-1 provides the Interaction - Domain View: ASTER On-Demand Non-Standard L1B.

Table 3.7.9.2-1. Interaction Table - Domain View: ASTER On-Demand Non-Standard L1B Production (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
F.1	Search (Results returned)	Science User	CLS (EDG)	Results Returned	None	The science user initiates a check to see if the non-standard L1B data is available.
F.2	Search (Results returned)	CLS (EDG)	ECS ASTGW	Results Returned	None	The EDG forwards the data availability search to the ECS ASTER Gateway (ASTGW).
F.3	Search (Results returned)	ECS ASTGW	ASTER GDS	Results Returned	None	The ECS ASTGW forwards the data availability search to the ASTER GDS.
F.4	Submit non-standard L1B Request	Science User	CLS (ODFRM)	The non-standard data is not already available.	None	If the non-standard L1B data is not already available, the scientist submits a non-standard L1B request through ODFRM.
F.5	Check User Authorization (Results returned)	CLS (ODFRM)	MSS (MCI)	Results Returned	None	The user's authorization is checked.
F.6	On-Demand Order	CLS (ODFRM)	PLS (ODPRM)	None	None	All the user selections for the On-demand Production Request are sent over to the PLS/ODPRM via CCS Middleware. A request ID generated by ODPRM is sent back to ODFRM.
F.7	Create MSS Order Tracking Elements	PLS (ODPRM)	MSS (MCI)	None	None	MSS order elements are created.
F.8	Initialize Status to "Queued"	PLS (ODPRM)	MSS (MCI)	None	None	PLS updates the order status in the order tracking database in MSS and sets the status to "Queued."
F.9	Subscribe	PLS (ODPRM)	CSS (SBSRV)	None	None	A subscription is placed for the non-standard L1B data.
F.10	Send Request	PLS (ODPRM)	ECS ASTGW	None	None	An order for a non-standard L1B order is received. The message should contain all relevant information for a L1B order.

Table 3.7.9.2-1. Interaction Table - Domain View: ASTER On-Demand Non-Standard L1B Production (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
F.11	Send Request	ECS ASTGW	ASTER GDS	None	None	The ECS ASTGW passes the order to the ASTER GDS.
F.12	Update Status (to "Waiting for L1B")	PLS (ODPRM)	MSS (MCI)	None	None	The PLS On-Demand Production Request Manager (ODPRM) updates the MSS order-tracking database to "Waiting for L1B."
F.13	Return Order ID	PLS (ODPRM)	CLS (ODFRM)	None	None	The PLS returns the order ID to the CLS (On-Demand Product Request Form - ODFRM).
F.14	Order Confirmation	CLS (ODFRM)	Science User	None	None	The order confirmation is sent to the science user.
F.15	Create Non-Standard L1B	ASTER GDS	ASTER GDS	None	None	The ASTER GDS generates a non-standard L1B product according to the order e-mail received from the PLS through the ECS ASTGW.
F.16	Insert L1B via Ingest (DTF Tape)	ASTER GDS	DSS (SDSRV)	A DTF Tape is used	None	The completed non-standard AST_L1B product is inserted into the Science Data Server via Ingest utilizing the DTF Tape after it is sent via commercial shipping to the DAAC Ops.
F.17	Insert event	DSS (SDSRV)	CSS (SBSRV)	None	None	The DSS (SDSRV) notifies the CSS (Subscription Server) of the insert.
F.18	Subscription Notification	CSS (SBSRV)	PLS (ODPRM)	None	None	The PLS Subscription Manager receives arrival notification for the L1B product and updates the PDPS internal status for the order. On-Demand Production Request Manager polls PDPS DB for the order status.
F.19	Update Status (to "L1B Received")	PLS (ODPRM)	MSS (ODPRM)	None	None	The PLS On-Demand Production Request Manager updates the MSS order-tracking database with a "L1B Received" status.
F.20	Completion notice	PLS (ODPRM)	Science User	None	None	The user receives email that the processing is completed.

3.7.9.3 ASTER On-Demand Non-Standard L1B Thread Component Interaction Table

Table 3.7.9.3-1 provides the Component Interaction: ASTER On-Demand Non-Standard L1B Production.

Table 3.7.9.3-1. Component Interaction Table: ASTER On-Demand Non-Standard L1B Production (1 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
F.1.1	Startup EDG	Science User	iPlanet Web Server	Command	The Science User invokes a Netscape browser and navigates to the EOS Data Gateway home page.
F.1.2	Select inventory search, provide query constraints, submit query	Science User	iPlanet Web Server	GUI	The Science User provides search constraints and the products desired. When query constraints are completed, the query is submitted.
F.2.1	Search (Results returned)	iPlanet Web Server	EcDmV0ToEcsGateway	ODL, over sockets	The EDG submits a search to the V0 Gateway, by converting the search criteria into an ODL structure and passing that structure to a socket provided by the Gateway. The correct socket is determined from configuration information contained in the Valids file.
F.3.1	Search	EcDmV0ToEcsGateway	EcDmEcsToAsterGateway	CCS Middleware	A search request is sent to the ASTER Gateway.
F.3.2	Search Performed	ASTER GDS	ASTER GDS	None	A search for the requested data is performed.
F.3.3	Results returned	EcDmEcsToAsterGateway	EcDmV0ToEcsGateway	CCS Middleware	The results of the search are returned to the V0 Gateway.
F.4.1	Submit Non-Standard L1B Request	Science User	EcClOdProductRequest (ODFRM)	GUI	A Science User makes selection for the desired product(s) on the On-Demand Product Request Form (ODFRM) GUI. When finished the user submits his/her request.
F.5.1	Check user authorization (Results returned)	EcClOdUserLogin	EcAcProfileMgr	CCS Middleware	The user's authorization is verified.

Table 3.7.9.3-1. Component Interaction Table: ASTER On-Demand Non-Standard L1B Production (2 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
F.6.1	On-Demand Order	EcClOdProductRequest (ODFRM)	EcPlOdMgr (ODPRM)	CCS Middleware	The sub-steps of this process are listed in detail as Steps E.5.1-E.6.10 of the ASTER On-Demand High Level Production thread.
F.7.1	Create MSS Order Tracking Elements	EcPlOdMgr (ODPRM)	AutoSys	CCS Middleware	The MSS order tracking elements are created.
F.8.1	Initialize Status (to "Queued")	EcPlOdMgr (ODPRM)	AutoSys	CCS Middleware	The status of the On-demand request is initialized to "Queued."
F.9.1	Subscribe	EcPlOdMgr	EcSbSubServer	CCS Middleware	The sub steps of this process are the same as Steps E.9.1-E.9.4 of the ASTER On-Demand High Level Production thread.
F.10.1	Send request	EcPlOdMgr	EcDmV0ToEcsGateway	CCS Middleware	An order for a non-standard L1B order is received. The message should contain all relevant information for a L1B order.
F.11.1	Send request	EcDmV0ToEcsGateway	EcDmEcsToAsterGateway	CCS Middleware	The ECS ASTGW passes on the order to the ASTER GDS.
F.12.1	Update status (to "Waiting for L1B")	EcPlOdMgr	EcMsAcOrderSrvr	CCS Middleware	The PLS updates the status to "Waiting for L1B."
F.13.1	Order ID Returned	EcPlOdMgr	EcClOdProductRequest (ODFRM)	CCS Middleware	The order ID is returned to the On-Demand Product Request Form (ODFRM) from the PLS.
F.14.1	Order Confirmation	EcClOdProductRequest	Science User	GUI	An order confirmation is sent by the ODFRM to the science user.
F.15.1	Create Non-Standard L1B	ASTER GDS	ASTER GDS	None	The requested non-standard L1B data is generated at the ASTER facility in Japan.
F.16.1	Insert L1B via Ingest (DTF Tape)	EcDmAsterToEcsGateway	EcDsScienceDataServer	Command	The DTF tape scenario, Section 3.7.5, documents the interactions for ingesting data into the Science Data Server using DTF tapes.

Table 3.7.9.3-1. Component Interaction Table: ASTER On-Demand Non-Standard L1B Production (3 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
F.17.1	Insert Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	The subscription(s) are submitted for L1B.
F.18.1	Subscription Notification	EcSbSubServer	EcPlSubMgr	Message Passing Mechanism	The subscriptions are submitted for L1B.
F.19.1	Update Status (to "L1B Received")	EcPlOdMgr	EcMsAcOrderSrvr	CCS Middleware	The PLS updates the status to "L1B Received."
F.20.1	Completion notice	EcPlOdMgr	Science User	Email	The completion notice is sent to the user via email.

3.7.10 ASTER On-Demand DEM Production Thread From the EDG

This thread shows how the ECS supports user's request for On-Demand production of the Digital Elevation Model (DEM) data product. This type of processing requires the operator to produce the DEM manually at the DAAC. The user submits a request to ECS through the EOS Data Gateway. The ECS parses the request information and sends the request to the DAAC operator. After the operator finishes producing the DEM, the operator informs the ECS. DEMs are archived in the Science Data Server/Storage Management once the DAAC operator inserts them via Ingest. Once the DEM product is archived and Distribution has occurred in accordance with parameters specified in the order, the User is notified about the availability of the DEM product

3.7.10.1 ASTER On-Demand DEM Thread Interaction Diagram - Domain View

Figure 3.7.10.1-1 is the ASTER On-Demand DEM Interaction diagram.

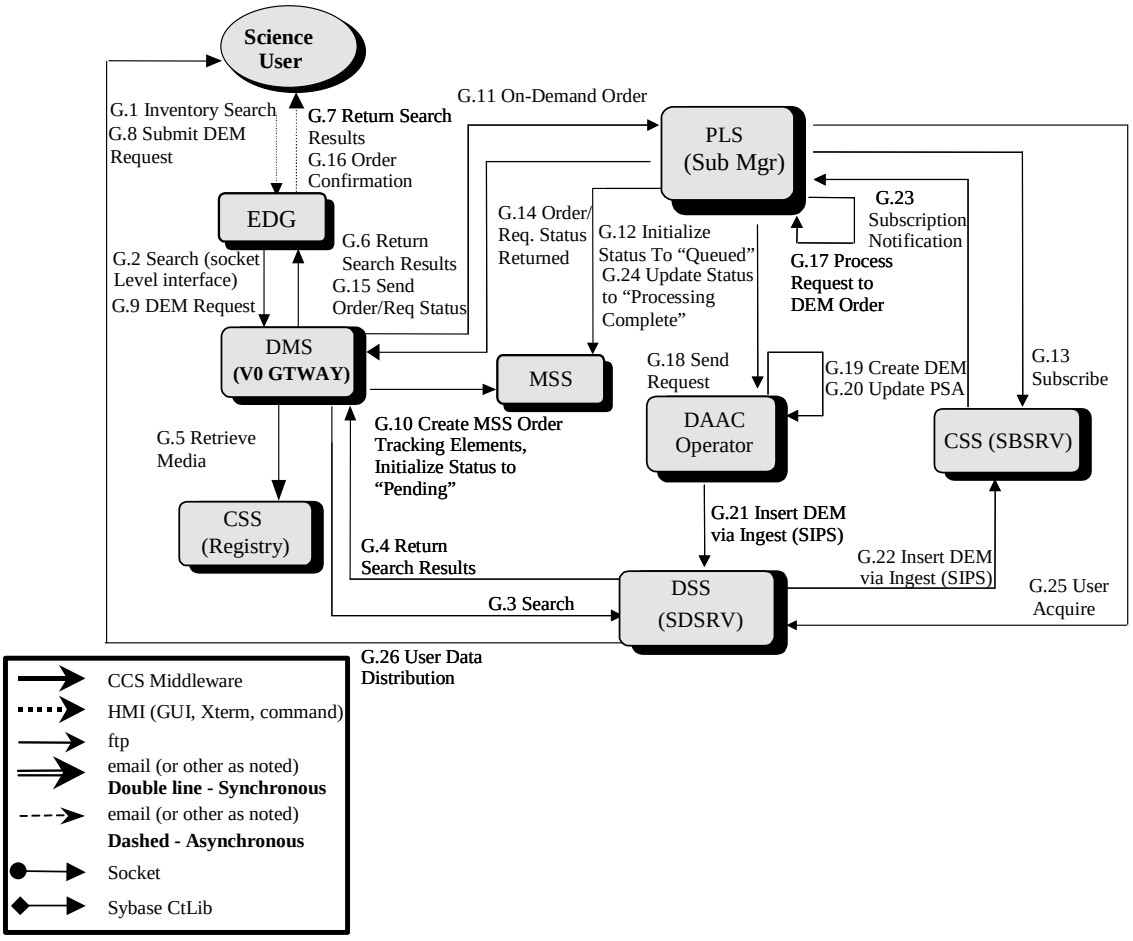

Figure 3.7.10.1-1. ASTER On-Demand DEM Interaction Diagram

3.7.10.2 ASTER On-Demand DEM Thread Interaction Table - Domain View

Table 3.7.10.2-1 provides the Interaction - Domain View: ASTER On-Demand DEM event descriptions.

Table 3.7.10.2-1. Interaction Table - Domain View: ASTER On-Demand DEM Production (1 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
G.1	Search	Science User	EDG	None	None	Prior to placing a new order, a search for a L1A product is conducted at the EOS Data Gateway (EDG) to determine if the data is already available.
G.2	Search	EDG	DMS (V0 GTWAY)	None	None	If the search does not locate the requested data at the EDG prior to placing a new order, a search is conducted at the Data Management Subsystem (DMS) Version 0 (V0) Gateway (V0 GTWAY) to determine if the data is already available.
G.3	Search	DMS (V0 GTWAY)	DSS (SDSRV)	None	None	If the search does not locate the requested data at the V0 Gateway prior to placing a new order, a search is conducted by the Science Data Server to determine if the data is already available.
G.4	Return Search Results	DSS (SDSRV)	DMS (V0 GTWAY)	None	None	The Science Data Server returns search results back to the DMS V0 Gateway.
G.5	Retrieve Media	DMS (V0 GTWAY)	CSS (Registry)	None	None	The results of this search are returned synchronously. The media options are returned from the Communications Subsystem (CSS) Registry Server and the results are passed back to the EOS Data Gateway, which displays them to the Science User.
G.6	Return results back	DMS (V0 GTWAY)	EDG	None	None	The V0 Gateway returns search results and media options back to the EOS Data Gateway (EDG).

Table 3.7.10.2-1. Interaction Table - Domain View: ASTER On-Demand DEM Production (2 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
G.7	Return results	EDG	Science User	None	None	The EOS Data Gateway returns search results back to the User.
G.8	Submit DEM Request	Science User	EDG	The requested data has not already been generated	None	The Scientist submits a Digital Elevation Model (DEM) request via the EOS Data Gateway.
G.9	DEM Request	EDG	DMS (V0 GTWAY)	This interface is actually accomplished via a synchronous ODL message	None	All user selections for DEM product requests are passed to the Data Management Subsystem's (DMS) V0 Gateway (V0 GTWAY).
G.10	Create MSS order tracking elements	DMS (V0 GTWAY)	MSS	None	None	The order status elements in the MSS' order tracking database are created.
G.11	On-Demand Order	DMS (V0 GTWAY)	PLS	None	None	The V0 Gateway passes the on-demand order to the Planning Subsystem (PLS) with an OrderId and RequestID.
G.12	Initialize Status (to "Queued")	PLS	MSS	None	None	The order status element in the MSS' order tracking database is initialized to "Queued."
G.13	Subscribe	PLS	CSS (SBSRV)	None	None	A subscription for the requested data is placed with the Communications Subsystem (CSS) Subscription Server.
G.14	Order and Request status Returned	PLS	DMS (V0 GTWAY)	None	None	The Order status and Request status are returned to the DMS V0 Gateway.

Table 3.7.10.2-1. Interaction Table - Domain View: ASTER On-Demand DEM Production (3 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
G.15	Send Order/Request status	DMS (V0 GTWAY)	EDG	None	None	The V0 Gateway send order status and request status back to the EOS Data Gateway.
G.16	Order Confirmation	EDG	Science User	None	None	The EOS Data Gateway notifies the Science User that the request has been submitted.
G.17	Process request to DEM order	PLS	PLS	None	None	Process request to DEM order
G.18	Send Request	PLS	DAAC Operator	None	None	The Planning Subsystem (PLS) sends a request to the DAAC Operator.
G.19	Create DEM	DAAC Operator	DAAC Operator	None	None	The DAAC operator generates a Digital Elevation Model (DEM) product according to the order email received from the PLS.
G.20	Update Metadata	DAAC Operator	DAAC Operator	None	None	The DAAC Operator updates the Product Specific Attribute (PSA) metadata.
G.21	Insert DEM via Ingest (SIPS)	DAAC Operator	DSS via Ingest (SIPS)	None	None	The DAAC operator inserts the DEM product into the Science Data Server through the Ingest Subsystem. This is done via a “SIPS” scenario – see Section 3.11.
G.22	Insert Event	DSS	CSS (SBSRV)	None	None	The DEM insert event is sent to the Communications Subsystem (CSS) Subscription Server.

Table 3.7.10.2-1. Interaction Table - Domain View: ASTER On-Demand DEM Production (4 of 4)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
G.23	Subscription Notification	CSS (SBSRV)	PLS (SubMgr)	None	None	The DEM subscription notification is sent to the PLS (Subscription Manager). The Subscription Manager updates the PDPS database according to the notification. The V0 Gateway polls the database to obtain the DEM availability.
G.24	Update Status (to "Processing Complete")	PLS	MSS	None	None	The order status element in the System Management Subsystem's (MSS') order tracking database is updated to "Processing Complete."
G.25	User Acquire	PLS	DSS (SDSRV)	None	None	The PLS submits a "user acquire" request for the DSS' Science Data Server to transfer the product(s) to the User who made the on-demand request.
G.26	User Data Distribution	DSS (SDSRV)	Science User	None	None	The requested DEM data is sent to the User.

3.7.11 ASTER Simplified Expedited Data Support Thread

This thread shows how the ECS supports a simplified version of Expedited data support.

3.7.11.1 ASTER Simplified Expedited Data Support Thread Interaction Diagram - Domain View

Figure 3.7.11.1-1 depicts the ASTER Simplified Expedited Data Support Interaction.

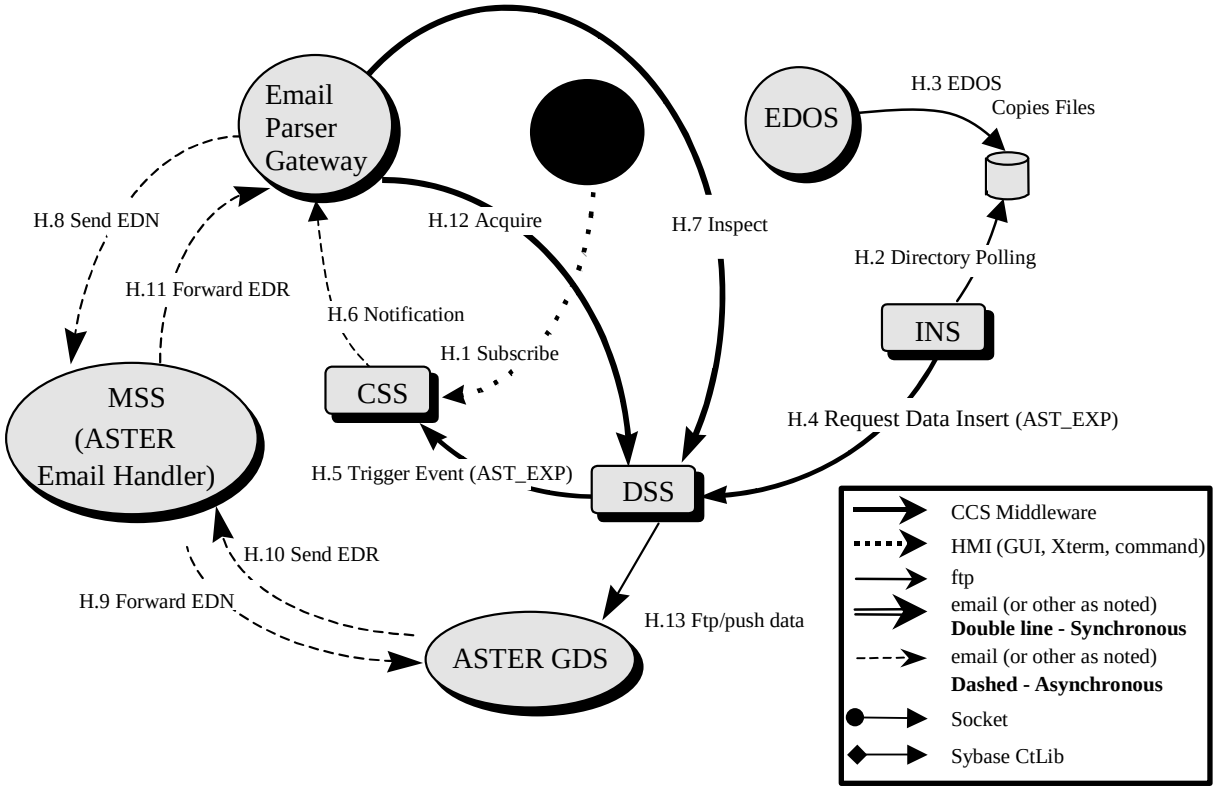

Figure 3.7.11.1-1. ASTER Simplified Expedited Data Support Interaction Diagram

3.7.11.2 ASTER Simplified Expedited Data Support Thread Interaction Table - Domain View

Table 3.7.11.2-1 provides the Interaction - Domain View: ASTER Simplified Expedited Data.

Table 3.7.11.2-1. Interaction Table - Domain View: ASTER Simplified Expedited Data (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
H.1	Subscribe	DAAC User Services Representative	CSS (SBSRV)	None	None	The DAAC User Services Representative places a subscription for the Science User to be notified when the AST_EXP is available.
H.2	Polling	INS (INGST)	Directory	None	Entire step is really a precondition.	When the system is started, Ingest begins polling a directory, looking for files that meet the following standard: *.EDR.XFR, in the pre-configured directory.
H.3	Copy Files	EDOS	Directory	None	EDOS knows the host and directory to place files.	EDOS copies the Expedited Data and metadata files to the directory, which Ingest is polling.
H.4	Request Data Insert	INS (INGST)	DSS (SDSRV)	1 AST_EXP @ 16.6MB	AST_EXP ESDT	Ingest inserts the new ASTER Expedited granule into the Data Server.
H.5	Trigger Event	DSS (SDSRV)	CSS (SBSRV)	None	None	Upon successful completion of insertion of ASTER Expedited Data, the AST_EXP:Insert event is triggered.
H.6	Notification	CSS (SBSRV)	CSS (Email Parser Gateway)	None	The Email Parser has a valid email address.	The Email Parser is notified, via email, that new ASTER Expedited Data is available. The notification contains the UR of the new AST_EXP granule.
H.7	Inspect	CSS (Email Parser Gateway)	DSS (SDSRV)	None	None	Search archives based on UR to obtain metadata information.
H.8	Send EDN	CSS (Email Parser Gateway)	MSS (ASTER e-mail header handler)	None	None	Send Expedited Data Set Notice to the MSS (ASTER Email Header Handler) for inclusion of the header information.

Table 3.7.11.2-1. Interaction Table - Domain View: ASTER Simplified Expedited Data (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
H.9	Forward EDN	MSS (ASTER e-mail header handler)	ASTER DAR Gateway (to ASTER GDS)	None	None	The MSS sends the EDN to the ASTER GDS via the ASTER DAR Gateway.
H.10	Send EDR	ASTER DAR Gateway (to ASTER GDS)	MSS (ASTER e-mail header handler)	None	None	The ASTER GDS sends a request to retrieve Expedited Data via the ASTER DAR Gateway.
H.11	Forward EDR	MSS (ASTER e-mail header handler)	CSS (Email Parser Gateway)	None	None	The MSS forwards the Expedited Data Request to the Email Parser Gateway after stripping the header information.
H.12	Acquire	CSS (Email Parser Gateway)	DSS (SDSRV)	None	None	The Email Parser Gateway makes an acquire request on behalf of the ASTER GDS to obtain the necessary data granules from DSS. The "acquire" can be for an Ftp push.
H.13	Ftp/push data	DSS (SDSRV)	ASTER DAR Gateway (to ASTER GDS)	None	None	The ASTER DAR Gateway transfers the data granules to the ASTER GDS via Ftp Push.

3.7.11.3 ASTER Simplified Expedited Data Support Thread Component Interaction Table

Table 3.7.11.3-1 provides the Component Interaction: ASTER Simplified Expedited Data.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (1 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.1.1	Startup SBSRV GUI	DAAC User Services Representative	EcSbGui	Xterm	The DAAC User Services Representative invokes the Subscription Server GUI application.
H.1.2	Create & Submit Subscription from GUI	DAAC User Services Representative	EcSbGui	Xterm	The DAAC User Services Representative represents him/herself as the Science User. The DAAC Operator brings up the GUI and clicks button to create new subscription. A list of events is then displayed from which the operator can choose to subscribe. The DAAC Operator selects the AST_EXP:Insert Event for subscription. Two actions (besides notification) are available from the Subscription Server at this time. FtpPush as a distribution mechanism is input via a GUI button. Other parameters required for FtpPush (including the Science User's host name, target directory, ftp user name, and ftp password) are input via the GUI. The other option is an Ftp Pull, also selected via a GUI button. There are no other parameters required for this option.
H.1.3	Retrieve Distribution Options	EcSbGui	EcCsRegistry	CCS Middleware	The Subscription Server GUI retrieves distribution options from the ECS Configuration Registry (Ftp push, Ftp pull).
H.1.4	Submit Subscription	EcSbGui	EcSbSubServer	CCS Middleware	Submit a subscription with Ftp action to the Subscription Server. This is accomplished with the EcClSubscription interface class. The correct Subscription Server is determined via a Server UR, declared in configuration.
H.1.5	Store a Subscription	EcSbSubServer	Sybase ASE	CtLib	The subscription is stored in the Sybase ASE Database.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (2 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.2.1	Ingest Polling	EcInPolling	Polling Directory	Ftp	Ingest begins polling the configured directory. It periodically looks for files named *.EDR.XFR. The polling periodicity is determined from a configuration file. The mask of the file to look for is determined from the configuration by the Notify Type of the data provider in the Ingest database. A Checksum Percentage value will be added to the configuration file based on data provider.
H.3.1	EDOS Copies Files	EDOS	Polling Directory	Ftp	EDOS transfers (via the Ftp service) the ASTER Expedited Data to the predetermined directory. Location, directory, user name and password are as per the ASTER-ECS ICD.
H.4.1	Polling Detects Files	EcInPolling	Polling Directory	Ftp	Ingest Polling detects files matching the *.EDR.XFR masks.
H.4.2	Send Request	EcInPolling	EcInReqMgr	CCS Middleware	Polling Ingest process copies the .EDR file into the Ingest remote directory and sends a Create Request message to the Request Manager. A checksum verification flag will also be send to Request Manager.
H.4.3	Granule Process Request	EcInReqMgr	EcInGran	CCS Middleware	Ingest Request Manager packages the request and a checksum verification flag into granules and sends them to the Ingest Granule Server.
H.4.4	Connect to SDSRV	EcInGran	EcDsScienceDataServer	CCS Middleware	Upon detecting an ASTER Expedited data file, Ingest begins a session with the Science Data Server by connecting. The correct Science Data Server is determined during EcInReqMgr startup, from Advertising, based on the data type.
H.4.5	Request Metadata Configuration File	EcInGran	EcDsScienceDataServer	CCS Middleware	Ingest requests the metadata configuration file (MCF) for the data being inserted. The data types being inserted are derived from the Ingest Request messages sent by the Polling server.
H.4.6	Validate Metadata	EcInGran	EcDsScienceDataServer	CCS Middleware	After building a metadata file for the AST_EXP granule, Ingest asks Science Data Server to validate the metadata, based on the granule's data type.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (3 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.4.7	Request Data Insert	EcInGran	EcDsScienceDataServer	CCS Middleware	Ingest requests that the received files for the AST_EXP are inserted into the Data Server. An Insert request, containing the names of the files comprising the Expedited Data granule, is created. The structure of the Insert Request is hard-coded in the granule server process. Science Data Server validates metadata and determines the archived names of the files.
H.4.8	STMGT Store	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server requests that the Expedited Data is archived. The archive server reads the inserted files directly from the Ingest polling directory. Files may be directed to different tapes based on observation time to optimize tape usage. STMGT will calculate a checksum for a configurable percentage of files that do not yet have one. STMGT will verify the checksum value for the files based on the ChecksumonIngest flag.
H.4.9	Adding a Granule to Inventory	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The validated metadata is parsed and added to the inventory of the Science Data Server, this includes checksum information when available.
H.5.1	Trigger Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of AST_EXP granule, the AST_EXP:Insert event is triggered. The correct subscription server is determined from the Science Data Server configuration. Provided with the event triggering is the UR of the inserted granule.
H.5.2	Retrieve Subscriptions	EcSbSubServer	Sybase ASE	CtLib	The Subscription Server queries the Sybase ASE database determining which subscriptions need to be activated, or fired. Each query “hit” is an activated subscription and executes independently.
H.6.1	Send Notification	EcSbSubServer	Email Service	E-mail	The Subscription Server notifies the Email Service that an AST_EXP granule and associated signal file is available. The UR of the granule is passed in the notification to the user, along with a reference to the subscription that is being fulfilled.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (4 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.6.2	Store the Email notification	EcCsEmailParser	Email Service	Sendmail Script	The ASTER E-mail Parser Gateway stores the notification as a text file in a configurable directory location using a Sendmail script. A reference to this script is available in the /etc/mail/aliases file.
H.7.1	Parse Notification	EcCsEmailParser	Unix File System	System calls	The ASTER E-mail Parser Gateway uses the EDN packager functionality to open the notification text file and reads the contents. It then parses the contents and recovers the Granule UR included in the notification.
H.7.2	Connect to SDSRV	EcCsEmailParser	EcDsScienceDataServer	CCS Middleware	The E-mail Parser Gateway then begins a session with the Science Data Server by connecting. The correct Science Data Server is determined by using the Server UR embedded in the Granule UR.
H.7.3	Inspect Granule Information	EcCsEmailParser	EcDsScienceDataServer	CCS Middleware	The E-mail Parser Gateway queries the Science Data Server for the metadata related to the granule specified in the notification received from the Subscription Server using the inspect interface provided by the Science Data Server client library. Using this information, the E-mail Parser Gateway composes an EDN.
H.8.1	Send EDN	EcCsEmailParser	Email Service	Key Mechanism	The E-mail Parser Gateway sends the EDN to the MSS ASTER Email Notification Service by using a configurable E-mail address.
H.9.1	Add Header	ASTER Filter.pl	Email Service	Sendmail Script	The MSS Header Handler adds a pre-defined header to the EDN that it received from the E-mail Parser Gateway.
H.9.2	Forward EDN	MSS (ASTER Email Header Handler)	Email Service	Key Mechanism	The MSS Header Handler forwards the EDN to the ASTER GDS using a configurable E-mail address specified in the ICD.
H.10.1	Send EDR	ASTER GDS	Email Service	Key Mechanism	Upon receiving the EDN, an operator at the ASTER GDS prepares an EDR and sends it to the MSS Email Notification service via email using a configurable address. The operator includes the Granule UR of the Expedited Data Set that he wishes to acquire in the EDR.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (5 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.10.2	Strip Header	ASTERRcvFilter.pl	Email Service	Sendmail Script	The MSS Header Handler strips the header from the EDR that it received from the ASTER GDS.
H.11.1	Forward EDR	MSS (ASTER Email Header Handler)	Email Service	Key Mechanism	The MSS Header Handler forwards the EDR to the ASTER E-mail Parser Gateway using an E-mail address.
H.11.2	Store EDR	EcCsEmailParser	Email Service	Sendmail Script	The E-mail Parser Gateway stores the EDR as a text file in a configurable directory location using a Sendmail script. A reference to this script is available in the /etc/mail/aliases file.
H.11.3	Parse EDR	EcCsEmailParser	Unix File System	System calls	The E-mail Parser Gateway opens the EDR text file and reads the contents. It then parses the contents and recovers the Granule UR included in the notification.
H.12.1 a	Connect to OMS	EcCsEmailParser	EcOmOrderManager	CCS Middleware	When configured to submit EDR to OMS, the E-mail Parser Gateway then begins a session with the Order Manager Server by connecting.
H.12.1 b	Connect to SDSRV	EcCsEmailParser	EcDsScienceDataServer	CCS Middleware	When configured to submit EDR to SDSRV, the E-mail Parser Gateway then begins a session with the Science Data Server by connecting. The correct Science Data Server is determined by using the Server UR embedded in the Granule UR. This is pertinent if there are multiple Science Data Servers in use at one DAAC in one mode.
H.12.2	Acquire	EcCsEmailParser	EcOmOrderManager or EcDsScienceDataServer	CCS Middleware	When configured to submit EDR to OMS, the E-mail Parser submits the request to OMS, then OMS forwards the request to SDSRV. When configure to submit EDR to SDSVR, the E-mail Parser submits the request directly to Science Data Server. The Acquire request is an Ftp Pull of all granules in the ESDT Reference Collection.
H.13.1	Create Staging Disk	EcDsScienceDataServer	EcDsStRequestManagerServer	CCS Middleware	The Science Data Server verifies access privileges for the granule and creates a staging disk area for metadata files, which allocates space and passes back a reference to that disk space. The amount of staging disk to request is determined by the size of the metadata file.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (6 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.13.2	Create Metadata file	EcDsScienceDataServer	EcDsScienceDataServer	CCS Middleware	For each granule referenced in the Acquire request, the Science Data Server creates a file containing the granule's metadata before passing to the Data Distribution Server.
H.13.3	Distribute Granules, Synchronous	EcDsScienceDataServer	EcDsDistributionServer	CCS Middleware	The Science Data Server submits a request to the Data Distribution Server. The request includes, for each granule, a reference to the metadata file as well as all data files. Other parameters from the Acquire request are passed to the Data Distribution Server.
H.13.4	Create Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server creates staging disk areas for the granule files in the archive. This allocates space and passes back a reference to that disk space. The amount of staging disk area to request is determined by the size of the metadata file.
H.13.5	STMGT Retrieve	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server requests Storage Management to retrieve the granule file archived. This results in the file being staged to read-only cache disks. STMGT will verify the checksum for a configurable percentage of the files that have one. Storage Management informs the Data Distribution Server of the file sizes. This means all files needed to fulfill the distribution request are in the read only cache and ready to be linked. The correct archive object to request is determined from the information provided by the Science Data Server in the distribution request. Locating the files may use the observation date when archive tape placement is optimized based on date. This returns references to the files in the read-only cache.
H.13.6	Claim Ownership	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server claims ownership of the staging disk created by the Science Data Server by sending a request to the Storage Management Request Manager.

Table 3.7.11.3-1. Component Interaction Table: ASTER Simplified Expedited Data (7 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
H.13.7	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the files from the read-only cache into the staging disk.
H.13.8	Link files to Staging Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server links the metadata files from the Science Data Server's staging disk into the staging disk.
H.13.9	FtpPush Files	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server now creates the Resource manager for Ftp Pushes via a Resource Manager Factory. The correct resource manager is determined from the media type handed to the resource factory (FtpPush, in this case). The correct FTP Server is determined from the configuration within the resource factory. The files, host, location, user name and password are all determined from the information provided in the original Acquire request.
H.13.10	Ftp/push data	EcDsStFtpServer	Operating System Ftp daemon	Ftp	The FTP Server performs the actual Ftp of the files via the Operating System Ftp daemon to the ASTER GDS.

3.7.12 ASTER Routine Processing Planning Data Start/Stop Time Thread

Thread Description

This thread illustrates how to perform ASTER processing for ACT, BTS, and ETS PGEs.

The following system functionality is exercised in this thread:

- The capability to re-process ASTER data.

Thread Preconditions

The PDPS database, the Science Data Server, the Subscription Server, the Production Request Editor, the Job Management Server, AutoSys, and the Planning Workbench must be up and running. Input granules must be available on the Science Data Server. The original Production Request must already be present in the PDPS DB. SSI&T must have set up the ASTER ACT PGE as a data scheduled PGE. The data type of AST_L1B must be set up as non-routine.

3.7.12.1 ASTER Routine Processing Planning Data Start/Stop Time Thread Interaction Diagram

Figure 3.7.12.1-1 depicts the ASTER Routine Processing Planning Data Start/Stop Time Interaction.

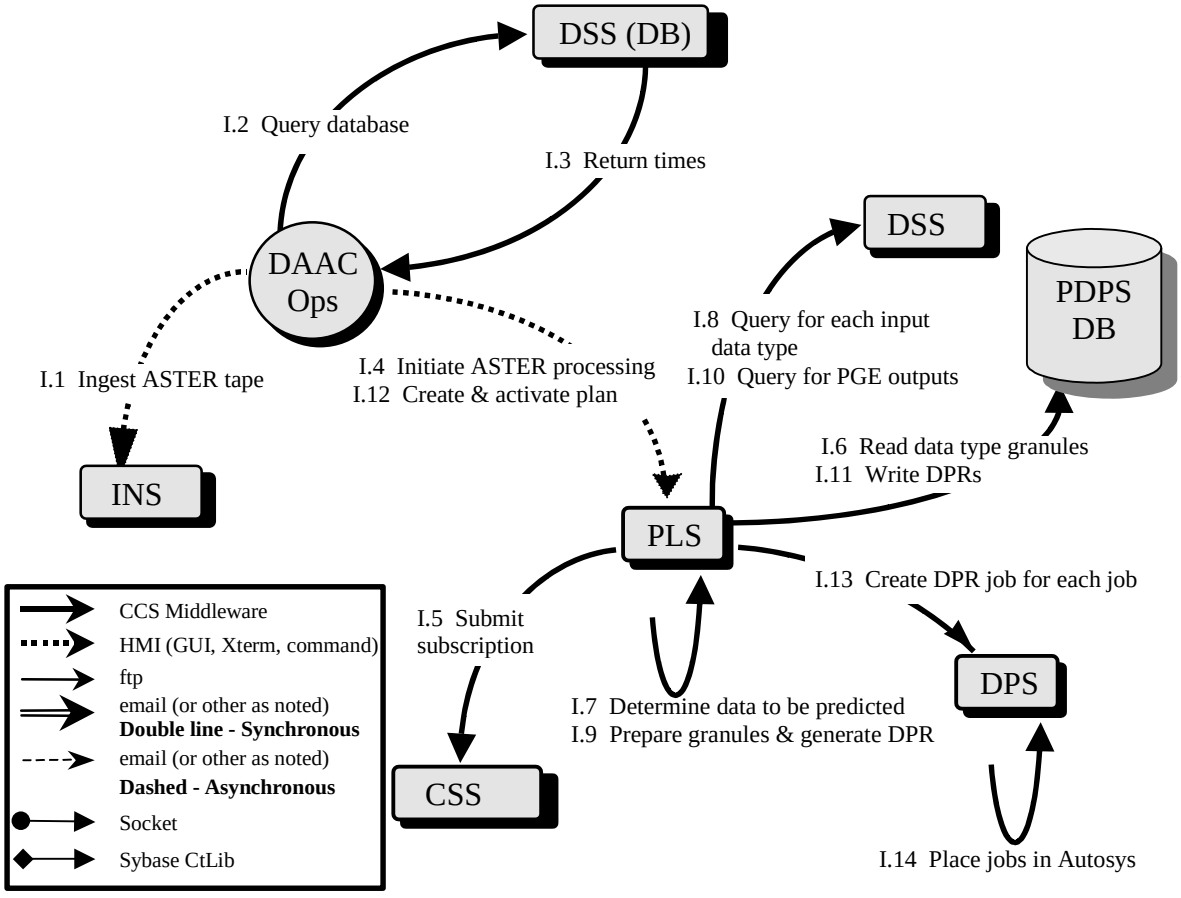

Figure 3.7.12.1-1. ASTER Routine Processing Planning Data Start/Stop Time Interaction Diagram

3.7.12.2 ASTER Routine Processing Planning Data Start/Stop Time Interaction Table - Domain View

Table 3.7.12.2-1 provides the interaction Domain View: ASTER Routine Processing Planning Data Start/Stop Time.

Table 3.7.12.2-1. Interaction Table - Domain View: ASTER Routine Processing Planning Data Start/Stop Time (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
I.1	Ingest ASTER tape	DAAC Ops -	INS (INGST)	ASTER Level 1 processing is not performed at ECS.	The ASTER PGE must be set up as a data scheduled PGE. The data type AST_L1B must be set up as non-routine.	The ASTER instrument team provides the tape.
I.2	Query database	DAAC Ops-	DSS (SDSRV DB)	Data provided by ASTER tape.	Tape must be successfully ingested.	Operator queries for time range needed for Production Request.
I.3	Return times	DSS (SDSRV DB)	DAAC Ops -	Data provided by ASTER tape.	Tape must be successfully ingested.	This start and stop time range is needed by the PLS Production Request Editor.
I.4	Initiate ASTER processing	DAAC Ops - Production Planner	PLS (PLANG)	The original Production Request must be known and accessible.	The Production Request Editor must be up and running.	The Production Planner initiates reprocessing.
I.5	Submit subscription	PLS (PLANG)	CSS (SBSRV)	Input granules must be available.	None	Subscriptions must be submitted individually for each data type.
I.6	Read data type granules	PLS (PLANG)	PDPS DB	The original Production Request must be present in the DB.	The DB must be up and running.	All the data type granules for the selected input data and time range must be read.
I.7	Determine data to be predicted	PLS (PLANG)	PLS (PLANG)	The original Production Request must be missing data.	None	Data is predicted to substitute for data that is missing from the PDPS DB.
I.8	Query for each input data type	PLS (PLANG)	DSS (SDSRV)	None	None	Each query is based on a time range.

Table 3.7.12.2-1. Interaction Table - Domain View: ASTER Routine Processing Planning Data Start/Stop Time (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
I.9	Prepare granules and generate DPR	PLS (PLANG)	PLS (PLANG)	None	CCS Middleware, the socket replacement code for DCE must be up and running.	Match each Science Data Server granule with a PDPS DB granule and then resume normal processing.
I.10	Query for PGE output	PLS (PLANG)	DSS (SDSRV)	None	CCS Middleware must be up and running.	If these outputs are there, skip generating the current DPR to avoid re-generating output products.
I.11	Write DPR(s)	PLS (PLANG)	PDPS DB	None	The DB must be up and running.	The DPR(s) are written to the DB normally.
I.12	Create and activate plan	DAAC Ops - Production Planner	PLS (PLANG)	None	The Production Request Editor and the Planning Workbench must be up and running.	The plan is created and activated normally.
I.13	Create a DPR job for each DPR	PLS (PLANG)	DPS (PRONG)	None	CCS MIDDLEWARE must be up and running.	The DPR job for each DPR is created normally.
I.14	Place jobs in AutoSys	DPS (PRONG)	DPS (PRONG)	None	AutoSys must be up and running.	The jobs are placed in AutoSys normally.

3.7.12.3 ASTER Routine Processing Planning Data Start/Stop Time Component Interaction Table

Table 3.7.12.3-1 provides the Component Interaction: ASTER Routine Processing Planning Data Start/Stop Time.

Table 3.7.12.3-1. Component Interaction Table: ASTER Routine Processing Planning Data Start/Stop Time (1 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
I.1.1	Ingest ASTER tape	DAAC Ops	EcInGUI	GUI	The ASTER instrument team provides the tape.
I.2.1	Query database	DAAC Ops	SDSRV DB (ECS Inventory)	Command line/isql	Script queries for time range needed for Production Request.
I.3.1	Return Times	SDSRV DB (ECS Inventory)	DAAC Ops	Command line/isql	This start and stop time range is needed by the PLS Production Request Editor.
I.4.1	Start Production Request Editor	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Request Editor is started normally.
I.4.2	Initiate request for Production Request to be reprocessed	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner initiates the reprocessing request.
I.4.3	Change PR type	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner changes the Production Request (PR) type from Routine to Reprocessing.
I.4.4	Save Production Request	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner saves the Production Request under a new, unique name.
I.5.1	Submit Subscription	EcPlSubMgr	EcSbSubServer	CCS Middleware	The subscriptions are submitted for each data type individually.
I.6.1	Read data type granules	EcPlPREditor_IF	PDPS DB	CtLib	All of the data type granules for input data and time range are read.
I.7.1	Determine data to be predicted	EcPlPREditor_IF	PDPS DB	CtLib	This determination is based on the data missing in the PDPS DB.
I.8.1	Query for each input data type	EcPlPREditor_IF	EcDsScienceDataServer	CtLib	These queries are based on a time range.
I.9.1	Inspect and match granules	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	Each Science Data Server granule is matched with a PDPS DB granule.
I.9.2	Generate DPR(s)	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	The DPR(s) are generated.

Table 3.7.12.3-1. Component Interaction Table: ASTER Routine Processing Planning Data Start/Stop Time (2 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
I.10.1	Query for PGE output	EcPlPREditor_IF	EcDsScienceDataServer	CCS Middleware	If these outputs are there, skip generating the current DPR to avoid re-generating output products.
I.11.1	Write DPR(s) to DB	EcPlPREditor_IF	PDPS DB	CtLib	The DPR(s) are written to the DB.
I.12.1	Shut down Production Request Editor	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner shuts down the Production Request Editor.
I.12.2	Start up Planning Workbench	DAAC Ops – Production Planner	EcPlWb	GUI	The Production Planner starts up the Planning Workbench.
I.12.3	Select Production Request and create a plan	DAAC Ops - Production Planner	EcPlWb	GUI	The Production Planner selects a Production Request and creates a plan.
I.12.4	Activate the plan	DAAC Ops - Production Planner	EcPlWb	GUI	The Production Planner activates the plan.
I.13.1	Create a DPR job for each DPR	EcPlWb	EcDpPrJobMgmt	CCS Middleware	A Data Processing Request (DPR) job is created for each DPR.
I.14.1	Jobs placed in AutoSys	EcDpPrJobMgmt	AutoSys	JIL (AutoSys API)	The job can now be run in AutoSys.

3.7.13 ASTER Routine Processing Planning Insertion Time Thread

This thread illustrates how to perform ASTER processing using the tar file insertion time instead of the usual data start and stop times for ASTER BTS (Brightness Temperature at Sensor) PGEs.

Note that this option is not available for ASTER ACT (Atmospheric Correction – TIR) and ETS (Emissivity/Temperature Separation) PGEs.

The following system functionality is exercised in this scenario:

- The capability to re-process ASTER data using the time the tar file was inserted.

Thread Preconditions

The PDPS database, the Science Data Server, the Subscription Server, the Production Request Editor, the Job Management Server, AutoSys, and the Planning Workbench must be up and running. Input granules must be available on the Science Data Server. The original Production Request must already be present in the PDPS DB. SSI&T must have set up the ASTER ACT PGE as a data scheduled PGE – see the ASTER Routine Processing Planning Data Start/Stop Time Thread. The data type of AST_L1B must be set up as non-routine.

3.7.13.1 ASTER Routine Processing Planning Insertion Time Thread Interaction Diagram – Domain View

Figure 3.7.13.1-1 depicts the ASTER Routine Processing Planning Insertion Time Thread Interaction.

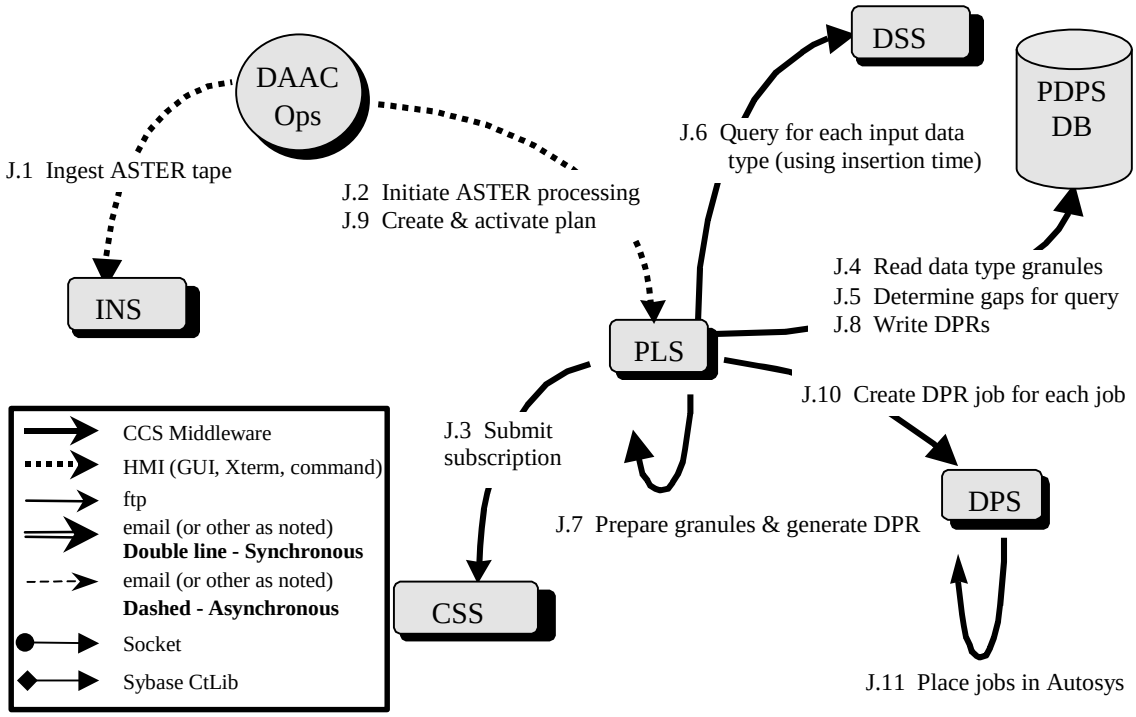

Figure 3.7.13.1-1. Routine Processing Planning Insertion Time Thread Interaction Diagram

3.7.13.2 Routine Processing Planning Insertion Time Interaction Table - Domain View

Table 3.7.13.2-1 provides the Interaction – Domain View: Routine Processing Planning Insertion Time Interaction.

Table 3.7.13.2-1. Interaction Table - Domain View: ASTER Routine Processing Planning Insertion Time (1 of 2)

Step	Interaction	Interface Client	Interface Provider	Data Issues	Preconditions	Description
J.1	Ingest ASTER tape	DAAC Ops	INS (INGST)	ASTER Level 1 processing is not performed at ECS.	The ASTER PGE must be set up as a data scheduled PGE. The data type AST_L1B must be set up as non-routine.	The ASTER instrument team provides the tape.
J.2	Initialize ASTER processing	DAAC Ops - Production Planner	PLS (PLANG)	The original Production Request must be known and accessible.	The Production Request Editor must be up and running.	The Production Planner initiates ad hoc processing using the tar file insertion time.
J.3	Submit subscription	PLS (PLANG)	CSS (SBSRV)	Input granules must be available.	None	Subscriptions must be submitted individually for each data type.
J.4	Read data type granules	PLS (PLANG)	PDPS DB	The original Production Request must be present in the DB.	The DB must be up and running.	All the data type granules for the selected input data and time range must be read.
J.5	Determine gaps for query	PLS (PLANG)	PDPS DB	None	None	The Production Request Editor determines the time ranges for the upcoming Science Data Server query.
J.6	Query for each input data type	PLS (PLANG)	DSS (SDSRV)	None	None	Each query is based on a time range and uses a tar file insertion time.
J.7	Prepare granules and generate DPR	PLS (PLANG)	PLS (PLANG)	None	CCS MIDDLEWARE must be up and running.	Match each Science Data Server granule with a PDPS DB granule and then resume normal processing.
J.8	Write DPR(s)	PLS (PLANG)	PDPS DB	None	The DB must be up and running.	The DPR(s) is written to the DB normally.

Table 3.7.13.2-1. Interaction Table - Domain View: ASTER Routine Processing Planning Insertion Time (2 of 2)

Step	Interaction	Interface Client	Interface Provider	Data Issues	Preconditions	Description
J.9	Create and activate plan	DAAC Ops - Production Planner	PLS (PLANG)	None	The Production Request Editor and the Planning Workbench must be up and running.	The plan is created and activated normally.
J.10	Create a DPR job for each DPR	PLS (PLANG)	DPS (PRONG)	None	CCS MIDDLEWARE must be up and running.	The Data Processing Request (DPR) job for each DPR is created normally.
J.11	Place jobs in AutoSys	DPS (PRONG)	DPS (PRONG)	None	AutoSys must be up and running.	The jobs are placed in AutoSys normally.

3.7.13.1 Routine Processing Planning Insertion Time Thread Component Interaction Table

Table 3.7.13.3-1 provides the Component Interaction: Routine Processing Planning Insertion Time Thread.

Table 3.7.13.3-1. Component Interaction Table: ASTER Routine Processing Planning Insertion Time (1 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
J.1.1	Ingest ASTER tape	DAAC Ops	EcInGUI	GUI	The ASTER instrument team provides the tape.
J.2.1	Start Production Request Editor	DAAC Ops - Production Planner	EcPlPREditor_IF	GUI	The Production Request Editor is started normally.
J.2.2	Initiate request for Production Request to be reprocessed	DAAC Ops - Production Planner	EcPlPREditor_IF	GUI	The Production Planner initiates the reprocessing request.
J.2.3	Change PR type	DAAC Ops - Production Planner	EcPlPREditor_IF	GUI	The Production Planner changes the PR type from Routine to Reprocessing.
J.2.4	Save Production Request	DAAC Ops - Production Planner	EcPlPREditor_IF	GUI	The Production Planner saves the Production Request under a new, unique name.
J.3.1	Submit subscription	EcPlSubMgr	EcSbSub Server	CCS Middleware	The subscriptions are submitted for each data type individually.

Table 3.7.13.3-1. Component Interaction Table: ASTER Routine Processing Planning Insertion Time (2 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
J.4.1	Read data type granules	EcPlPREditor_IF	PDPS DB	CtLib	All of the data type granules for input data and time range are read.
J.5.1	Determine gaps for query	EcPlPREditor_IF	PDPS DB	CtLib	Determine time ranges for the upcoming Science Data Server query.
J.6.1	Query for each input data type	EcPlPREditor_IF	EcDsScienceDataServer	CtLib	These queries are based on a time range.
J.7.1	Inspect and match granules	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	Each Science Data Server granule is matched with a PDPS DB granule.
J.7.2	Generate DPR(s)	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	The DPR(s) are generated.
J.8.1	Write DPR(s) to DB	EcPlPREditor_IF	PDPS DB	CtLib	The DPR(s) are written to the DB.
J.9.1	Shut down Production Request Editor	DAAC Ops - Production Planner	EcPlPREditor_IF	GUI	The Production Planner shuts down the Production Request Editor.
J.9.2	Start up Planning Workbench	DAAC Ops - Production Planner	EcPlWb	GUI	The Production Planner starts up the Planning Workbench.
J.9.3	Select Production Request and create a plan	DAAC Ops - Production Planner	EcPlWb	GUI	The Production Planner selects a Production Request and creates a plan.
J.9.4	Activate the plan	DAAC Ops - Production Planner	EcPlWb	GUI	The Production Planner activates the plan.
J.10.1	Create a DPR job for each DPR	EcPlWb	EcDpPrJobMgmt	CCS Middleware	A DPR job is created for each DPR.
J.11.1	Jobs placed in AutoSys	EcDpPrJobMgmt	AutoSys	JIL (AutoSys API)	The job can now be run in AutoSys.

3.7.14 ASTER Spatial Query Thread

Thread Description

This thread illustrates how to perform ASTER processing for a predefined geographic area. This area can be expanded (padded) by a predefined number of kilometers. Currently, this capability is being utilized for ACT (Atmospheric Correction – TIR) and ACVS (Atmospheric Correction –

VNIR, SWIR) PGEs. The set of points describing the polygon, which represent the geographic area along with the number of kilometers of the "pad" are defined in the key input granules. If the "pad" is not required, the kilometer value of the "pad" is set to zero.

The following system functionality is exercised in this thread:

- The capability to routinely process ASTER data for an existing or for an expanded (or padded), predefined geographic area.

Thread Preconditions

The PDPS database, the Science Data Server, the Subscription Server, the Production Request Editor, the Subscription Manager, the Job Management Server, AutoSys, and the Planning Workbench must be up and running. Input granules must be available on the Science Data Server. The data type has been defined as spatial pad during the SSI&T process. The instrument team controls the size of the pad (in kilometers). Conceptually, however, the size of the pad should probably be less than that of the instrument's photograph, so it can be thought of as a way to obtain portions of the neighboring photographs, which border on the original (or central) photograph.

Note: Due to limitations in the current version of the SQS COTS package, the spatial region defined (i.e., the original size of the polygon combined with the size of the pad) must not exceed 60 degrees in latitude or longitude. Since this is a huge area, this limitation should not impact the user.

3.7.14.1 ASTER Spatial Query Thread Interaction Diagram

Figure 3.7.14.1-1 depicts the ASTER Spatial Query Interaction.

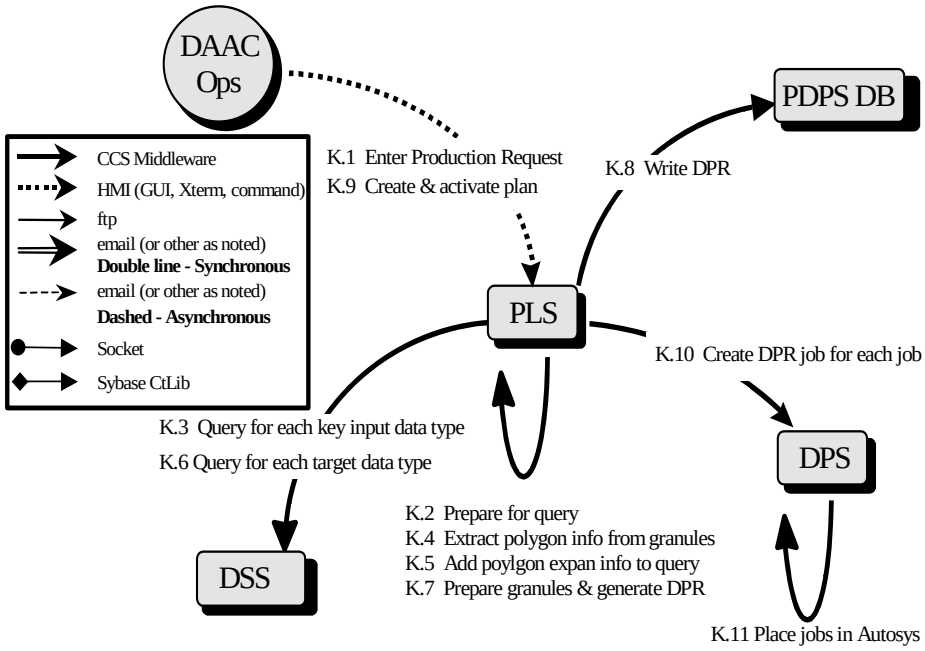

Figure 3.7.14.1-1. ASTER Spatial Query Interaction Diagram

3.7.14.2 ASTER Spatial Interaction Table - Domain View

Table 3.7.14.2-1 provides the interaction Domain View: ASTER Spatial Query.

Table 3.7.14.2-1. Interaction Table - Domain View: ASTER Spatial Query (1 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
K.1	Enter Production Request	DAAC Ops - Production Planner	PLS (PLANG)	Input data must already be available on the Science Data Server.	None	The Production Planner initiates a spatial query.
K.2	Prepare for query	PLS (PLANG)	PLS (PLANG)	The constraints are based on time information.	None	The query is prepared using the time range.
K.3	Query for each key input data type	PLS (PLANG)	DSS (SDSRV)	None	None	Each query is based on a time range.
K.4	Extract polygon information from granules	PLS (PLANG)	PLS (PLANG)	Extracts information from GlParameterList.	None	This pulls information from GlParameterList.
K.5	Add polygon expansion information to query	PLS (PLANG)	PLS (PLANG)	A spatial pad data type was selected.	SSIT was performed for a spatial pad data type.	The number of kilometer that pad the query.
K.6	Query for each target data type	PLS (PLANG)	DSS (SDSRV)	None	None	Uses spatial information extracted in the previous step.
K.7	Prepare granules and generate DPR	PLS (PLANG)	PLS (PLANG)	None	None	Prepare the granules using the data returned from the Science Data Server.
K.8	Write DPR(s)	PLS (PLANG)	PDPS DB	None	None	The DPR(s) are written to the PDPS DB.
K.9	Create and activate plan	DAAC Ops – Production Planner	PLS (PLANG)	None	None	The plan is created and activated normally.

Table 3.7.14.2-1. Interaction Table - Domain View: ASTER Spatial Query (2 of 2)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
K.10	Create DPR job for each DPR	PLS (PLANG)	DPS (PRONG)	None	None	The DPR job for each DPR is created normally.
K.11	Place jobs in AutoSys	DPS (PRONG)	DPS (PRONG)	None	None	The jobs are placed in AutoSys normally.

3.7.14.3 ASTER Spatial Query Component Interaction Table

Table 3.7.14.3-1 provides the Component Interaction: ASTER Spatial Query.

Table 3.7.14.3-1. Component Interaction Table: ASTER Spatial Query (1 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
K.1.1	Start Production Request Editor	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Request Editor is started normally.
K.1.2	Initiate request for PR to be processed	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner initiates the processing request.
K.1.3	Save PR	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner saves the PR under a new, unique name.
K.2.1	Prepare for query	EcPlPREditor_IF	EcPlPREditor_IF	GUI	Use the time range as constraints.
K.3.1	Query for each key input data type	EcPlPREditor_IF	EcSbSubServer	CCS Middleware	Each query is based on a time range.
K.4.1	Extract polygon information from granules	EcPlPREditor_IF	EcPlPREditor_IF	LibGI	This pulls information from the GIParameterList.
K.5.1	Add polygon expansion information to query	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	The query is padded with the designated number of kilometers.
K.6.1	Query for each target data type	EcPlPREditor_IF	EcDsScienceDataServer	CCS Middleware	A query is needed for each target data type.

Table 3.7.14.3-1. Component Interaction Table: ASTER Spatial Query (2 of 2)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
K.7.1	Inspect granules	EcPlPREditor_IF	PDPS DB	CtLib	Each Science Data Server granule is stored in the PDPS DB.
K.7.2	Generate DPR(s)	EcPlPREditor_IF	EcPlPREditor_IF	CtLib	The DPR(s) are generated.
K.8.1	Write DPR(s) to DB	EcPlPREditor_IF	PDPS DB	CtLib	The DPR(s) are written to the PDPS DB.
K.9.1	Shut down Production Request Editor	DAAC Ops – Production Planner	EcPlPREditor_IF	GUI	The Production Planner shuts down the Production Request Editor.
K.9.2	Start up the Planning Workbench	DAAC Ops – Production Planner	EcPlWb	GUI	The Production Planner starts up the Planning Workbench.
K.9.3	Select the PR(s) and create a plan	DAAC Ops – Production Planner	EcPlWb	GUI	The Production Planner selects a Production Request and creates a plan.
K.9.4	Activate the plan	DAAC Ops – Production Planner	EcPlWb	GUI	The Production Planner activates the plan.
K.10.1	Create a DPR job for each DPR	EcPlWb	EcDpPrJobMgmt	CCS Middleware	A DPR job is created for each DPR.
K.11.1	Jobs placed in AutoSys	EcDpPrJobMgmt	AutoSys	JIL (AutoSys API)	The job can now be run in AutoSys.

3.7.15 ASTER View ECS Data Holdings Thread

This thread shows how an ASTER GDS user can obtain information about the location and other attributes of specified data sets, and browse specified data sets.

3.7.15.1 ASTER View ECS Data Holdings Thread Interaction Diagram – Domain View

Figure 3.7.15.1-1 depicts the ASTER View ECS Data Holdings Interaction.

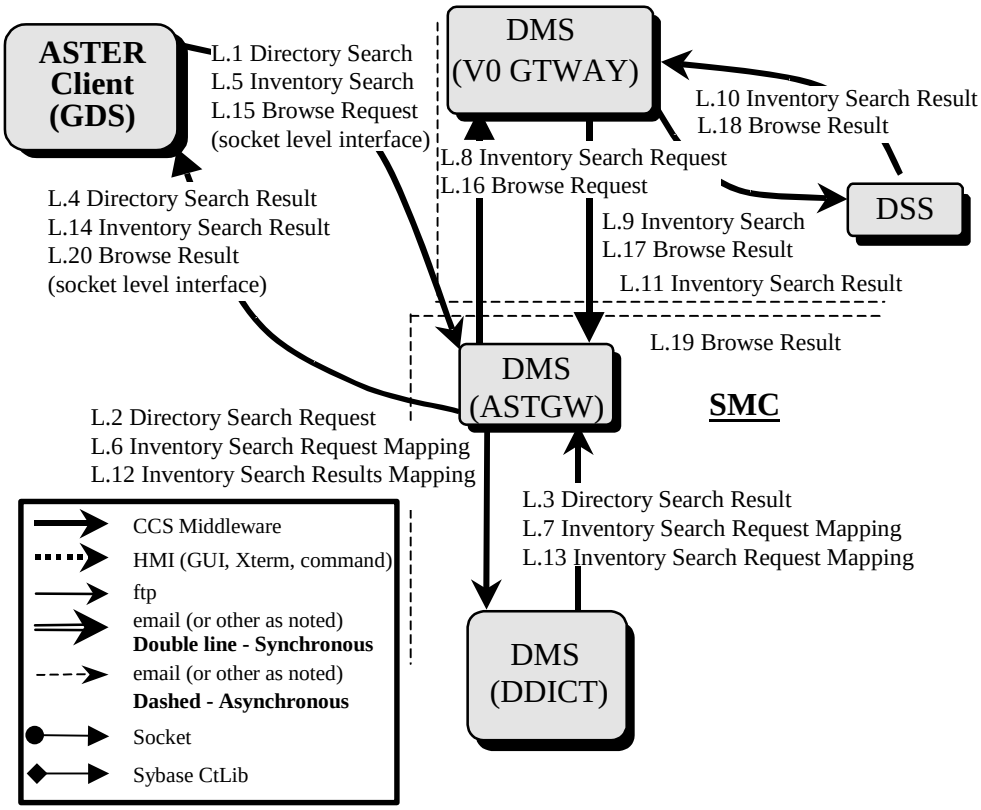

Figure 3.7.15.1-1. ASTER View ECS Data Holdings Interaction Diagram

3.7.15.2 ASTER View ECS Data Holdings Thread Interaction Table – Domain View

Table 3.7.15.2-1 provides the interaction Domain View: ASTER View ECS Data Holdings.

Table 3.7.15.2-1. Interaction Table - Domain View: ASTER View ECS Data Holdings (1 of 2)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
L.1	Directory Search Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	An ASTER client submits the ASTER user's Directory search request to the ASTER-ECS gateway via a specific socket.
L.2	Directory Search Request	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway (ASTGW) queries the Data Dictionary (DDICT), using the parameters specified in the request ODL, for the Directory Search Results.
L.3	Directory Search Result	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary sends results to the ASTER Gateway.
L.4	Directory Search Result	DMS (ASTGW)	ASTER Client (GDS)	None	None	The ASTER Gateway sends back the Directory Search Results to the ASTER Client, which displays them to the ASTER user.
L.5	Inventory Search Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	The ASTER client submits the ASTER user's Inventory Search Request to the ASTER-ECS Gateway in ASTER ODL format via a specific socket.
L.6	Inventory Search Request Mapping	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway queries the Data Dictionary for the equivalent ECS mappings for the ASTER attributes/values specified in the request.
L.7	Inventory Search Request Mapping	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary returns ECS equivalents of the specified ASTER attributes/values to the ASTER Gateway.
L.8	Inventory Search Request	DMS (ASTGW)	DMS (V0 GTWAY)	None	None	The ASTER Gateway submits the request to the remote V0 Gateway.
L.9	Inventory Search Result	DMS (V0 GTWAY)	DSS (SDSRV)	None	None	The V0 Gateway translates the Search criteria from ODL to a query object (using GIParameters), and submits that query to the Search service. The V0 Gateway optionally configures a chunk size, which determines how many granules are returned to the V0 Gateway at one time.

Table 3.7.15.2-1. Interaction Table - Domain View: ASTER View ECS Data Holdings (2 of 2)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
L.10	Inventory Search Results Mapping	DSS (SDSRV)	DMS (DDICT)	None	None	The results of this Search are processed synchronously, and passed back to the V0 Gateway.
L.11	Inventory Search Result	DMS (V0 GTWAY)	DMS (ASTGW)	None	None	The V0 Gateway returns the results to the ASTER Gateway in V0 ODL form.
L.12	Inventory Search Results Mapping	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway queries the Data Dictionary for the equivalent ASTER attributes/values for V0 attributes/values it received from the remote V0 Gateway.
L.13	Inventory Search Results Mapping	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary returns the ASTER equivalents of the V0 attributes/values to the ASTER Gateway.
L.14	Inventory Search Result	DMS (ASTGW)	ASTER Client (GDS)	None	None	The ASTER Gateway sends back the results to ASTER Client, which displays them to the ASTER User.
L.15	Browse Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	ASTER Client submits an Integrated Browse Request to the ASTER Gateway via a specific socket interface.
L.16	Acquire Browse	DMS (ASTGW)	DMS (V0 GTWAY)	None	None	The ASTER Gateway sends the Browse request to the remote V0-ECS Gateway.
L.17	Browse Request	DMS (V0 GTWAY)	DSS (SDSRV)	None	None	The V0 Gateway submits a Browse request for the browse granule.
L.18	Browse Result	DSS (SDSRV)	DMS (V0 GTWAY)	None	None	The results of this Browse request are returned synchronously, and are passed back to the V0 Gateway.
L.19	Browse Result	DMS (V0 GTWAY)	DMS (ASTGW)	None	None	The V0 Gateway sends the Browse results to the ASTER Gateway.
L.20	Browse Result	DMS (ASTGW)	ASTER Client (GDS)	None	None	The ASTER Gateway sends the results to the ASTER Client.

3.7.15.3 ASTER View ECS Data Holdings Thread Component Interaction Table

Table 3.7.15.3-1 provides the Component Interaction: ASTER View ECS Data Holdings.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (1 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.1.1	Submit a Directory Search	ASTER User	ASTER Client	Command	The ASTER user invokes an ASTER client at the ASTER GDS and sends a directory search request to the ASTER Gateway.
L.1.2	Receive a Directory Search Request	ASTER Client	EcDmAsterToEcsGateway	ODL, over sockets	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.
L.1.3	User Profile	EcDmAsterToEcsGateway	EcMsAcRegUserSrvr	CCS Middleware	Upon receiving the request, the ASTER Gateway retrieves the User Profile using the ECS authenticator from the ODL message. The User Registration database is replicated across DAACs, so connection is made to the local User Registration Server.
L.2.1	Connect to DDICT	EcDmAsterToEcsGateway	Sybase ASE	CtLib	The ASTER Gateway connects to the Data Dictionary database to run a SQL, based on the criteria in the request ODL.
L.2.2	Run Query against DDICT	EcDmAsterToEcsGateway	Sybase ASE	CtLib	The SQL query is run against the Data Dictionary database, which returns the metadata of all the granules satisfying the search criteria.
L.3.1	Retrieve results	Sybase ASE	EcDmAsterToEcsGateway	Distributes Object	The ASTER Gateway retrieves the results of the database query and puts them in an ODL structure to be sent to the ASTER client.
L.3.2	Create ODL	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway formats granule metadata into an ODL structure.
L.4.1	Send Results	EcDmEcsToAsterGateway	ASTER Client	ODL, Over Sockets	The results, which are in ODL, are sent to the ASTER client via the same socket on which it originally received the request.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (2 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.5.1	Submit an Inventory Search Request	ASTER GDS	EcDmAsterToEcsGateway	ODL, Over Sockets	The ASTER user invokes an ASTER client and sends an Inventory Search Request.
L.5.2	Receive an Inventory Search Request	ASTER Client	EcDmAsterToEcsGateway	CCS Middleware	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.
L.5.3	Convert to internal format	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway converts the ODL structure to a GlParameterList.
L.6.1	Formulate attribute list	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway formulates an attribute list to be converted to ECS format.
L.6.2	Submit Inventory Search Mapping Request	EcDmAsterToEcsGateway	Sybase ASE	CtLib	The ASTER Gateway submits a query for equivalent attributes to the Data Dictionary.
L.7.1	Retrieve equivalent attributes	Sybase ASE	EcDmAsterToEcsGateway	CtLib	The ASTER Gateway retrieves the equivalent attribute results from the Data Dictionary.
L.7.2	Submit data server request	EcDmAsterToEcsGateway	Sybase ASE	CtLib	The ASTER Gateway submits a query to determine which ECS servers archive the requested data.
L.7.3	Retrieve data server results	Sybase ASE	EcDmAsterToEcsGateway	CtLib	The ASTER Gateway retrieves the data server results from the DDICT.
L.8.1	Arrange requests by server	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway arranges request according to the server, which can handle them.
L.8.2	Convert requests to ODL	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway converts requests for each server to V0 ODL.
L.8.3	Submit requests to servers	EcDmAsterToEcsGateway	EcDmV0ToEcsGateway	ODL, Over Sockets	The ASTER Gateway concurrently sends the request ODL to the V0 Gateway at each server required to handle a request.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (3 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.9.1	Establish ECS User	EcDmV0ToEcsGateway	EcMsAcRegUserSrvr	CCS Middleware	The V0 Gateway retrieves the User Profile using ECS Authenticator from ODL message, which includes an encrypted User ID and Password. The User Registration database is replicated across DAACs, so the connection is made to the local User Registration Server.
L.9.2	Translate Query	EcDmV0ToEcsGateway	EcDmDictServer	CtLib	The V0 Gateway translates the V0 terms from ODL into ECS names for query submittal using the Data Dictionary database. The interface currently is directly to the Data Dictionary database. The database name is retrieved from a configuration file.
L.9.3	Connect to SDSRV	EcDmV0ToEcsGateway	EcDsScienceDataServer	CCS Middleware	The V0 Gateway first connects to the Science Data Server. The correct Science Data Server is determined from a configuration file.
L.9.4	SDSRV Query	EcDmV0ToEcsGateway	EcDsScienceDataServer	CCS Middleware	The V0 Gateway translates the query into a DsClQuery object. This object is handed to the Search interface of the DsCl ESDT ReferenceCollector. After the search the Gateway receives a list of URs, then it does an “Inspect” to the Science Data Server to get the metadata. It first performs a GetQueryableParameter to determine all attributes associated with each granule. The V0 Gateway optionally configures a chunk size, which determines how many granules are returned to the V0 Gateway at one time.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (4 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.10.1	Request Metadata	EcDsScience DataServer	Sybase ASE/SQS	CtLib	The Science Data Server breaks down the query object and translates it into a sequence of calls to the inventory database. Resultant rows are converted into data granules, each with their metadata extracted from the database. These results are packaged and returned to the query client.
L.10.2	Return Results	EcDsScience DataServer	EcDmV0ToEcsGateway	CCS Middleware	The Search method is synchronous, so the results of the search are returned to the calling function. After the search the Gateway receives a list of URs, then it does an "Inspect" to the Science Data Server to get the metadata.
L.11.1	Retrieve Results	EcDmV0ToEcsGateway	EcDmAsterToEcsGateway	ODL, over Sockets	When the V0 Gateway gets the results, they are translated into ODL, and passed back to the ASTER Gateway. The correct socket for sending results to the ASTER Gateway is the one used to submit the query.
L.11.2	Combine Results	EcDmAsterToEcsGateway	EcDmV0ToEcsGateway	Internal	The individual result sets from each DAAC are combined into a single result set.
L.11.3	Formulate attribute list	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway formulates an attribute list to be converted to ASTER format.
L.12.1	Submit Inventory Search Mapping Request	EcDmAsterToEcsGateway	Sybase ASE	CtLib	The ASTER Gateway submits a query for equivalent attributes to the Data Dictionary.
L.12.2	Retrieve equivalent attributes	Sybase ASE	EcDmAsterToEcsGateway	CtLib	The ASTER Gateway retrieves the equivalent attribute results from the Data Dictionary.
L.13.1	Retrieve data server results	Sybase ASE	EcDmAsterToEcsGateway	CtLib	The ASTER Gateway retrieves the data server results from the Data Dictionary.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (5 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.14.1	Translate Inventory Search Result	EcDmEcsToAsterGateway	ASTER GDS	ODL, over Sockets	When the ASTER Gateway gets the results from each DAAC, they are translated into ASTER ODL.
L.14.2	Return Results	EcDmEcsToAsterGateway	ASTER GDS	ODL, over Sockets	The combined results set is returned in chunks to the ASTER GDS.
L.15.1	Submit an Browse Request	ASTER GDS	EcDmAsterToEcsGateway	Command	The ASTER user invokes an ASTER client and sends a Browse Request.
L.15.2	Receive Browse Request	ASTER Client	EcDmAsterToEcsGateway	ODL, Over Sockets	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.
L.15.3	Convert to internal format	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway converts the ODL structure to a GlParameterList.
L.16.1	Arrange requests by server	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway arranges request according to the server, which can handle them.
L.16.2	Convert requests to ODL	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	Internal	The ASTER Gateway converts requests for each server to V0 ODL.
L.16.3	Submit requests to servers	EcDmAsterToEcsGateway	EcDmV0ToEcsGateway	ODL, Over Sockets	The ASTER Gateway concurrently sends the request ODL to the V0 Gateway at each server required to handle a request.
L.17.1	Establish ECS User	EcDmV0ToEcsGateway	EcDsScienceDataServer	CCS Middleware	The V0 Gateway submits an Acquire request for the browse granule.
L.17.2	Translate Query	EcDmV0ToEcsGateway	EcDmDictServer	CtLib	The V0 Gateway translates the V0 terms from ODL into ECS names for query submittal using the Data Dictionary database. The interface currently is directly to the Data Dictionary database. The database name is retrieved from a configuration file.

Table 3.7.15.3-1. Component Interaction Table: ASTER View ECS Data Holdings (6 of 6)

Step	Event	Interface Client	Interface Provider	Interface Mechanism	Description
L.17.3	Connect to SDSRV	EcDmV0ToEcsGateway	EcDsScienceDataServer	CCS Middleware	The V0 Gateway first connects to the Science Data Server. The correct Science Data Server is determined from a configuration file.
L.17.4	SDSRV Query	EcDmV0ToEcsGateway	EcDsScienceDataServer	CCS Middleware	The V0 Gateway translates the query into a DsClQuery object. This object is handed to the Search interface of the DsCl ESDT ReferenceCollector. After the search the Gateway receives a list of URs. Then it does an "Inspect" to the Science Data Server to get the metadata. It first performs a GetQueryableParameter to determine all attributes associated with each granule. The V0 Gateway optionally configures a chunk size, which determines how many granules are returned to the V0 Gateway at one time.
L.18.1	Request Metadata	EcDsScienceDataServer	Sybase ASE/SQS	CtLib	The Science Data Server retrieves browse image. This result is packaged and returned to the Query client.
L18.2	Return Results	EcDsScienceDataServer	EcDmV0ToEcsGateway	CCS Middleware	The Search method is synchronous, so the resulting browse image is returned to the calling function.
L.19.1	Retrieve Results	EcDmV0ToEcsGateway	EcDmEcsToAsterGateway	ODL, over Sockets	When the V0 Gateway gets the results, they are translated into ODL, and passed back to the ASTER Gateway in chunks. The correct socket for sending results to the ASTER Gateway is the one used to submit the query.
L.20.1	Return Results	EcDmEcsToAsterGateway	ASTER GDS	ODL, over Sockets	The combined results set is returned in chunks to the ASTER GDS.

3.7.16 ASTER Price & Order Data Thread

This thread shows how an ASTER GDS user can obtain a price estimate for ECS products, place an order for ECS products stored at any DAAC and obtain the status of a previously placed order.

3.7.16.1 ASTER Price & Order Data Thread Interaction Diagram – Domain View

Figure 3.7.16.1-1 depicts the ASTER Price & Order Data Interaction.

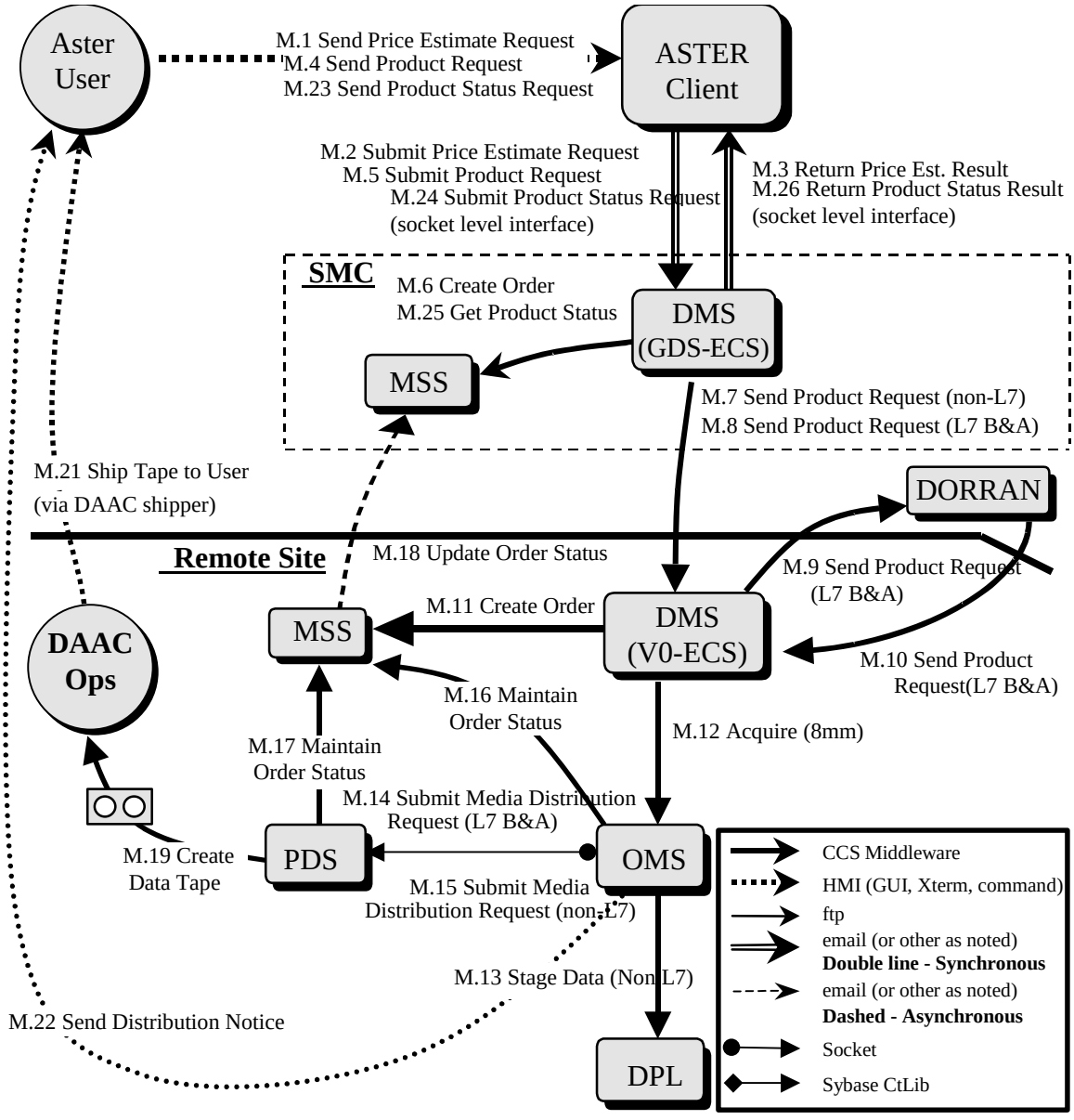

Figure 3.7.16.1-1. ASTER Price & Order Data Interaction Diagram

3.7.16.2 ASTER Price & Order Data Thread Interaction Table – Domain View

Table 3.7.16.2-1 provides the Domain View: ASTER Price & Order Data.

Table 3.7.16.2-1. Interaction Table - Domain View: ASTER Price & Order Data (1 of 4)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
M.1	Send Price Estimate Request	ASTER User	ASTER Client (GDS)	None	None	The ASTER User decides to request a Price Estimate and invokes the ASTER Client at the GDS to send a Price Estimate Request.
M.2	Submit Price Estimate Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	The ASTER Client submits the ASTER User's Price Estimate Request to the GDS-ECS gateway in GDS ODL format via a specific socket.
M.3	Return Price Estimate Result	DMS (ASTGW)	ASTER Client (GDS)	None	None	The ASTER Gateway (ASTGW) sends back the Price Estimate result to the ASTER Ground Data System (GDS).
M.4	Send Product Request	ASTER User	ASTER Client (GDS)	None	None	The ASTER User decides to request a Product Request and invokes the ASTER Client to send a Product Request.
M.5	Submit Product Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	The ASTER Client submits the ASTER User's Product Request to the GDS-ECS Gateway in GDS ODL format via a INITIATOR_REQUEST_ID and specific socket.
M.6	Create Order	DMS (ASTGW)	MSS (SMC)	None	None	The ASTER Gateway sends a request to the MSS on the SMC to create an order and stores the INITIATOR_REQUEST_ID in the MSS order-tracking database.

Table 3.7.16.2-1. Interaction Table - Domain View: ASTER Price & Order Data (2 of 4)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
M.7	Send Product Request	DMS (ASTGW)	DMS (V0 GTWAY) (Remote)	None	None	The ASTER Gateway sends the product request for the granule stored at the remote DAAC to the V0 Gateway, via orderID:requestID ODL form.
M.8	Send Product Request	DMS (ASTGW)	DMS (V0 GTWAY)	None	None	The ASTER Gateway sends the Product Request for Landsat 7 products to the V0 Gateway.
M.9	Send Product Request	DMS (V0 GTWAY)	DORRAN	None	None	The V0 Gateway sends the Product Request to the DORRAN Billing and Accounting System.
M.10	Send Product Request	DORRAN	DMS (V0 GTWAY) (Remote)	None	None	The DORRAN approves and sends the Product Request to the V0 Gateway at a Remote Site.
M.11	Create Order	DMS (V0 GTWAY)	MSS (Remote)	None	None	The V0 Gateway sends a Create Order to the MSS in the tracking database.
M.12	Acquire	DMS (V0 GTWAY)	OMS	None	None	The V0 Gateway sends a Request to Acquire data from the Order Manager Server, via one of the hard media, for the Science User.
M.13	Stage Data	OMS	DPL	None	None	The Order Manager Server submits staging request into DPL Database. DPL picks up request, stages data and queues a data staged notification in OMS Database.
M.14	Submit Media Distribution Request (L7 B&A)	OMS (Remote)	PDS	None	None	If OMS is configured to use PDS for physical media creation, OMS submits requests for L7 B&A data to the PDS.
M.15	Submit Media Distribution Request (non-L7)	OMS	PDS	None	None	If OMS is configured to use PDS for physical media creation, OMS submits requests for non-L7 data to the PDS.

Table 3.7.16.2-1. Interaction Table - Domain View: ASTER Price & Order Data (3 of 4)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
M.16	Maintain Order Status	PDS	MSS	None	OMS is configured to use PDS for physical media creation	The PDS updates the order status in the order-tracking database.
M.17	Maintain Order Status	PDS (Remote)	MSS (Remote)	None	OMS configured to use PDS for physical media creation	The PDS updates the order status in the order-tracking database.
M.18	Update Order Status	MSS (Remote)	MSS (SMC)	None	OMS is configured to use PDS for physical media creation.	The MSS updates the order status in the order-tracking replicate database.
M.19.A	Create Data Tape	DSS (Remote)	DAAC Ops (Remote)	None	OMS is configured to use PDS for physical media creation.	The Data Server copies the file to a 8mm tape and marks the order as "Ready For Shipment".
M.19.B	Create Data Tape	OMS	DAAC Ops	None	Physical Media Creation is configured to use OMS	OMS assigns physical device and dispatches appropriate module to create the physical media. Upon successful completion, the Operator puts the media through QC.
M.20	Ship Tape to User	DAAC Ops (Remote)	ASTER User	None	None	The DAAC shipper collects the tape and the packing list, and generates a media-shipping label for delivery to the ASTER User.
M.21	Send Distribution Notice	OMS (Remote)	ASTER User	None	None	The OMS sends a distribution notice to the ASTER User.
M.22	Send Product Status Request	ASTER User	ASTER Client (GDS)	None	None	The ASTER User decides to request a Product Request Status and invokes the ASTER Client to send a Product Request Status.

Table 3.7.16.2-1. Interaction Table - Domain View: ASTER Price & Order Data (4 of 4)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
M.23	Submit Product Status Request	ASTER Client (GDS)	DMS (ASTGW)	None	None	The ASTER Client submits the ASTER User's Product Status Request to the GDS-ECS Gateway in GDS ODL format via an INITIATOR_REQUEST_ID and specific socket.
M.24	Get Product Status	DMS (ASTGW)	MSS (MCI - SMC)	None	None	The ASTER Gateway requests the MSS to Get Product Status, which includes Order status and request status.
M.25	Return Product Status Result	DMS (ASTGW)	ASTER Client (GDS)	None	None	The ASTER Gateway sends back the Product Status Result to the ASTER Client.

3.7.16.3 ASTER Price & Order Data Thread Component Interaction Table

Table 3.7.16.3-1 provides the Component Interaction: ASTER Price & Order Data.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (1 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.1.1	Startup Aster GUI	ASTER User	ASTER Client (GDS)	Command	The ASTER User invokes the Aster Client GUI.
M.1.2	Submit Price Estimate Request	ASTER User	ASTER Client (GDS)	GUI	The ASTER User selects Price Estimate Request. After selecting granules, the query is submitted to the ASTER Gateway.
M.2.1	ASTGW Price Estimate Request	ASTER Client (GDS)	EcDmAsterToEcsGateway	ODL over socket	Upon receiving the Price Estimate Request, the ASTER GDS-ECS Gateway computes a price estimate using the cost of an L7 product from the configuration files. The price of all other products is zero.
M.2.2	Compute predicted completion date.	EcDmAsterToEcsGateway	EcDmAsterToEcsGateway	None	The predicted completion date is computed as the number of days to complete the order from the configuration file.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (2 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.3.1	Price Estimate Result	EcDmAsterToEcsGateway	ASTER GDS (Client)	ODL over socket	Once the results are computed, it is translated into ODL and passed back to the ASTER Client. The ASTER Client then displays the results of the query to the user.
M.4.1	Select Product Request	ASTER User	ASTER Client (GDS)	GUI	The ASTER User selects a set of data granules to order by media such as 8mm. When this is complete, it is submitted to the ASTER Gateway.
M.5.1	Aster Gateway order	ASTER Client (GDS)	EcDmAsterToEcsGateway	ODL over socket	The ASTER Ground Data System (GDS) submits an order to the ASTER Gateway by converting the order into an ODL structure and passing that structure to a socket provided by the gateway. The correct socket is determined from configuration information in the valids file. The order contains contact, shipping information together with authenticator and initial request ID.
M.6.1	Establish ECS user	EcDmAsterToEcsGateway	EcMsAcRegUserSrvr	CCS Middleware	The ASTER Gateway retrieves the user Profile using the ECS authenticator from the ODL message, which is an encrypted User ID and Password. The User Registration database is replicated across DAACs, so the connection is made to the local User Registration Server that is at the SMC.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (3 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.6.2	Request Attribute Mapping	EcDmAsterToEcsGateway	EcDmDictServer	CtLib	The ASTER Gateway translates the ASTER terms from ODL into ECS names for request submittal using the Data Dictionary database. The interface is directly to the Data Dictionary database. The database name is retrieved from a configuration file.
M.6.3	Create Tracked Order	EcDmAsterToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The ASTER Gateway creates an order object through a local (SMC) Order Tracking Server and records the initial request ID into the Order Tracking database. The initial status is set to "Pending."
M.6.4	Store Tracked Order	EcMsAcOrderSrvr	Sybase ASE	CtLib	The order is saved to the order database at SMC.
M.6.5	Create Tracked Request	EcDmAsterToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The ASTER Gateway creates each individual request object through a local (SMC) Order Tracking Server by linking it to the order object for order tracking purpose.
M.6.6	Store Tracked Request	EcMsAcOrderSrvr	Sybase ASE	CtLib	The tracked request is saved to the order database at SMC.
M.7.1	Request Non-L7 Product	EcDmAsterToEcsGateway	EcDmV0ToEcsGateway	ODL over socket	The ASTER Gateway sends non-L7 data granule order to remote DAAC by a socket connection to the V0 Gateway, where the requested data is archived. The correct V0 Gateway to be connected is determined by the ASTER Gateway.
M.8.1	Request L7 Product	EcDmAsterToEcsGateway	EcDmV0ToEcsGateway	CCS Middleware	The ASTER Gateway sends the product order request to the V0 Gateway based on the data being L70R WRS.
M.9.1	Acquire to DORRAN	EcDmV0ToEcsGateway	DORRAN	ODL over socket	The V0 Gateway sends the "acquire" to the DORRAN system.
M.9.2	B & A Verification	EcDmV0ToEcsGateway	DORRAN Comp.	Operator	DORRAN validates the request by checking the account level of the requester and the required funding level of the request.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (4 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.10.1	Acquire to V0-ECS Gateway	DORRAN	EcDmV0ToEcsGateway (Remote)	ODL over socket	The Operator validates the order and DORRAN forwards all the remaining granules to the V0 Gateway over a specific socket to a remote DAAC, such as EDC.
M.11.1	Create 5Tracked Order	EcDmV0ToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The V0 Gateway creates an order object at the Order Tracking Server, sets the order ID by the one, which comes from the ASTER Gateway or DORRAN.
M.11.2	Store Tracked Order	EcMsAcOrderSrvr	Sybase ASE	CtLib	The tracked order is saved to the order database at the remote DAAC.
M.11.3	Create Tracked Request	EcDmV0ToEcsGateway (Remote)	EcMsAcOrderSrvr	CCS Middleware	The V0 Gateway creates a request object at the Order Tracking Server, sets the request ID by the one, which comes from the ASTER Gateway or DORRAN.
M.11.4	Store Tracked Request	EcMsAcOrderSrvr	Sybase ASE	CtLib	The tracked request is saved to the order database at the remote DAAC.
M.12.1	Create Order and Request	EcDmV0ToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The V0 Gateway creates an order and request from MSS Order Tracking interface and marks order source as “V0GW.”
M.12.2	Submit Request	EcDmV0ToEcsGateway	SYBASE ASE	CtLib	The V0 Gateway submits a request into the OMS Database.
M.13.1	Validate Request	EcOmOrderManager	SYBASE ASE	CtLib	The Order Manager retrieves request from its Database and validates the request against criteria.
M.13.2	Submit insert action	EcOmOrderManager	SYBASE ASE	CtLib	The Order Manager Server queues an insert action in DPL Database for each granule of a request that is not found on the DPL disk.
M.13.3	Send granule staged notification	DPL	SYBASE ASE	CtLib	The DPL queues a granule staged action in the OMS Database with a status and status detail.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (5 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.14.1	Submit Request (L7 B&A)	EcOmOrderManager	EcPdPDSISServer	socket	Assuming physical media creation is configured to use PDS, the Order Manager submits L7 B&A requests to EcPdPDSISServer via socket.
M.15.1	Submit Request (non-L7)	EcOmOrderManager	EcPdPDSISServer	socket	Assuming physical media creation is configured to use PDS, the Order Manager submits non-L7 requests to the EcPdPDSISServer after the requests are staged to the DPL storage.
M.16.1	Update Tracked Request Status	EcOmOrderManager	Sybase ASE	CtLib	The Order Manager updates the status of the tracked request to “Active”, “Transferring”, “Shipped”, etc. in Order Tracking Database.
M.16.2	Update Tracked Status	Sybase ASE	Sybase ASE	CtLib	OMS stored procedure calls MSS stored procedure to update order tracking status.
M.17.1	Update Tracked Request Status	EcPdPDSISServer	Sybase ASE	JDBC	Assuming physical media creation is configured to use PDS, theEcPdPDSISServer updates the status of the tracked request to “Active”, “Transferring”, “Shipped”, etc. by calling MSS stored procedure.
M.18.1	Remote Update Order status	Sybase ASE	Sybase ASE	CtLib	The Sybase ASE database trigger at the remote DAAC, such as EDC, is fired upon the update at the step M.13.2. This trigger updates the order status at the SMC Order Tracking database.
M.18.2	Compress Disk	EcDsDistributionServer	EcDsStRequestManagerServer	CCS Middleware	The Data Distribution Server asks the Staging Disk Server via the Storage Management Request Manager to compress the staging disk.
M.19.1.A	Create requested hard media	EcPdPDSISServer	Oracle	CCS Middleware	Assuming physical media creation is configured to use PDS, the PDSIS server passes the request to the PDSSA software for media creation. The Operator activates the request, mounts the media, dismounts media and performs Quality Control (QC) on the media. Upon successful Quality Control, a tape label is printed.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (6 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.19.1.B	Create Requested Hard Media	DAAC Ops	None	EcOmGui	Assuming physical media creation is configured to use OMS, Operator follows OMS actions to load media for creation and for QC. Upon successful completion, the request status is updated to "Ready for Shipment".
M.20.1	Determine if request is ready for shipping	DAAC Ops - Distribution Technician	PDSISMTOIX	GUI	Assuming physical media creation is configured to use PDS, the state of the request is updated to "Ready for shipment" upon successful completion. A packing list and shipping label are printed. The Operator marks the request as shipped.
M.20.2	Ship Tapes	DAAC Ops - Data Technician	DAAC Ops - Data Technician	Internal	Using commercial shipping vendors (determined by DAAC policy), the DAAC Data Technician labels the tape, packages the tape(s) and packing list, labels the package and ships to the address provided with the request.
M.20.3	Tapes Shipped	DAAC Ops - Data Technician	ASTER User	Mail	Tapes are physically shipped to the ASTER User.
M.21.1	Send Distribution Notice	EcOmOrderManager	ASTER User	Email	Assuming physical media creation is configured to use PDS, the Order Manager Server sends a distribution notice to the ASTER User when the request is shipped. PDS also sends a DN.
M.22.1	Select Product Status Request	ASTER User	ASTER Client (GDS)	GUI	The ASTER User selects an order status request by specifying an initial request ID and submits it to the ASTER Gateway.
M.23.1	Status to Aster Gateway	ASTER Client (GDS)	EcDmAsterToEcsGateway	ODL over socket	The ASTER GDS submits an order to the ASTER Gateway by converting the order into an ODL structure and passing that structure to a socket provided by the gateway. The correct socket is determined from configuration information in the valids file. The product status request contains the ASTER User's authenticator and initial request ID.

Table 3.7.16.3-1. Component Interaction Table: ASTER Price & Order Data Thread (7 of 7)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
M.24.1	Establish ECS user	EcDmAsterToEcsGateway	EcMsAcRegUserSrvr	CCS Middleware	The ASTER Gateway retrieves the user Profile using the ECS authenticator from the ODL message, which is an encrypted User ID and Password. The User Registration database is replicated across DAACs, so the connection is made to the local User Registration Server, which is at the SMC.
M.24.2	Retrieve Tracked Order	EcDmAsterToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The ASTER Gateway retrieves the order object through a local (SMC) Order Tracking Server, by providing the initial request ID.
M.24.3	Retrieve Tracked Order	EcMsAcOrderSrvr	Sybase ASE	CtLib	The tracked order is retrieved from the order database at SMC.
M.24.4	Retrieve Tracked Request	EcDmAsterToEcsGateway	EcMsAcOrderSrvr	CCS Middleware	The ASTER Gateway retrieves each individual request object through a local (SMC) Order Tracking Server.
M.24.5	Retrieve Tracked Request	EcMsAcOrderSrvr	Sybase ASE	CtLib	The tracked request is retrieved from the order database at the SMC.
M.25.1	Return Order Status to Aster User	EcDmAsterToEcsGateway	ASTER GDS (Client)	ODL over Socket	The ASTER Gateway first maps the ECS order status code to the ASTER GDS product order status code, then converts the order status to an ODL structure and sends the ODL structure to the ASTER Client via a socket.

3.7.17 User View and Order ASTER GDS Data Thread

This thread shows how an ECS user can obtain information on attributes of specified data sets, browse specified data sets and place an order for ASTER products stored at GDS.

3.7.17.1 User View and Order ASTER GDS Data Thread Interaction Diagram – Domain View

Figure 3.7.17.1-1 depicts the View and Order ASTER GDS Data Interaction.

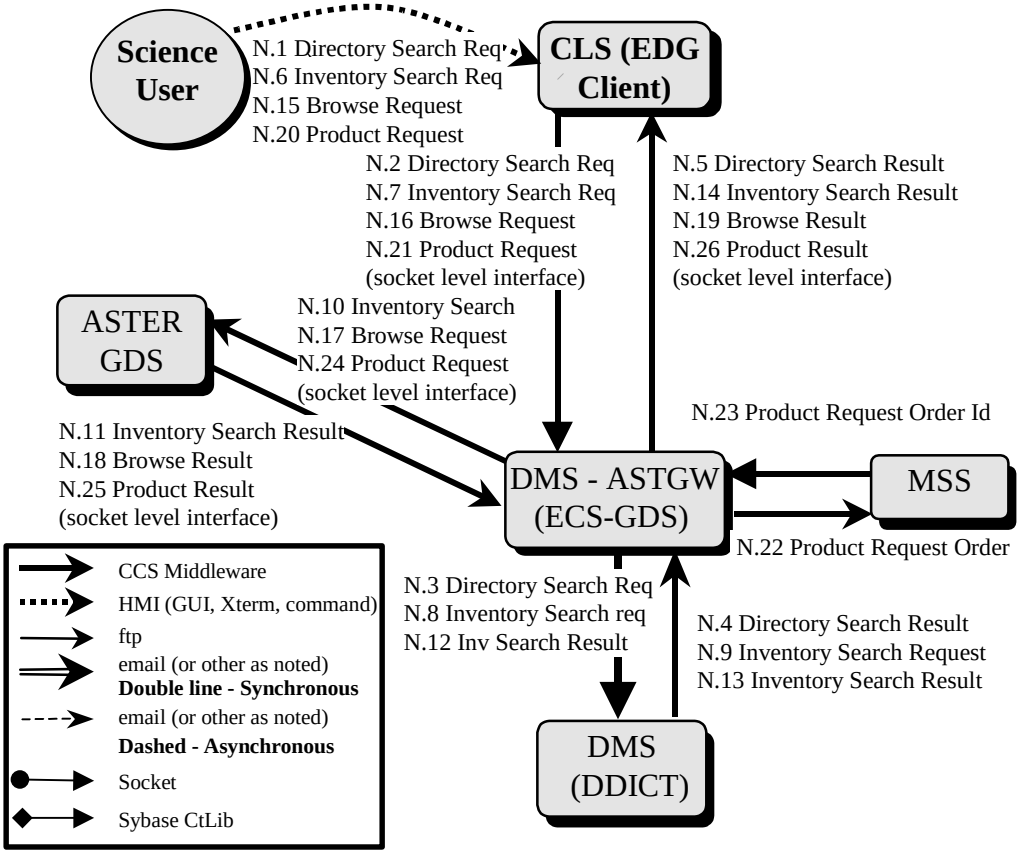

Figure 3.7.17.1-1. User View and Order ASTER GDS Data Interaction Diagram

3.7.17.2 User View and Order ASTER GDS Data Thread Interaction Table – Domain View

Table 3.7.17.2-1 provides the interaction Domain View: User View and Order ASTER GDS Data.

Table 3.7.17.2-1. Interaction Table - Domain View: User View and Order ASTER GDS Data (1 of 3)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
N.1	Directory Search Request	Science User	CLS (EDG)	None	None	A Science User decides to request a Directory Search and invokes the Netscape Navigator and navigates to the EDG and sends a Directory Request.
N.2	Directory Search Request	CLS (EDG)	DMS (ASTGW)	None	None	The EDG submits the Science User's Directory request to the ECS-ASTER Gateway in EDG ODL format via a specific socket.
N.3	Directory Search Request	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway (ASTGW) queries the Data Dictionary (DDICT), using the parameters specified in the request ODL, for the Directory results.
N.4	Directory Search Result	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary sends results to the ASTER Gateway.
N.5	Directory Search Result	DMS (ASTGW)	CLS (EDG)	None	None	The ASTER Gateway sends the results to the EDG, which displays them to the Science User.
N.6	Inventory Search	Science User	CLS (EDG)	None	None	A User decides to search for ASTER Ground Data System (GDS) data. He/She invokes the Netscape Navigator and navigates to the EDG and specifies search parameters.
N.7	Inventory Search	CLS (EDG)	DMS (ASTGW)	None	None	The EDG submits the Science User's Search criteria to the ECS-ASTER Gateway in EDG ODL format via a specific socket.
N.8	Inventory Search	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway queries the Data Dictionary for the equivalent ASTER mappings for the V0 attributes/values specified in the request.
N.9	Inventory Search	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary returns ASTER equivalents of the specified V0 attributes/values to the ASTER Gateway.
N.10	Inventory Search	DMS (ASTGW)	ASTER GDS	None	None	The ASTER Gateway submits the request to the ASTER GDS.

Table 3.7.17.2-1. Interaction Table - Domain View: User View and Order ASTER GDS Data (2 of 3)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
N.11	Inventory Search Result	ASTER GDS	DMS (ASTGW)	None	None	The ASTER GDS returns the results to the ASTER Gateway in the ASTER ODL form.
N.12	Inventory Search Results	DMS (ASTGW)	DMS (DDICT)	None	None	The ASTER Gateway queries the Data Dictionary for the equivalent V0 attributes/values for ASTER attributes/values it received from the ASTER GDS.
N.13	Inventory Search Results	DMS (DDICT)	DMS (ASTGW)	None	None	The Data Dictionary returns the V0 equivalents of the ASTER attributes/values to the ASTER Gateway.
N.14	Inventory Search Result	DMS (ASTGW)	CLS (EDG)	None	None	The ASTER Gateway sends back the results to the EDG, which displays them to the Science User.
N.15	Browse Request	Science User	CLS (EDG)	None	None	A User decides some of these granules might be of interest, so before ordering them he/she decides to get a browse image of one to verify.
N.16	Browse Request	CLS (EDG)	DMS (ASTGW)	None	None	The EDG submits an Ftp Browse Request to the ASTER Gateway in V0 ODL format via a specific socket interface.
N.17	Acquire Browse	DMS (ASTGW)	ASTER GDS	None	None	The ASTER Gateway translates the V0 ODL into ASTER ODL and sends it to the ASTER GDS server.
N.18	Browse Result	ASTER GDS	DMS (ASTGW)	None	None	The ASTER GDS sends the Browse results in ASTER ODL form to the ASTER Gateway.
N.19	Browse Result	DMS (ASTGW)	CLS (EDG)	None	None	The ASTER Gateway converts the ASTER ODL into EDG ODL and sends the results to the EDG.
N.20	Product Request	Science User	CLS (EDG)	None	None	A User decides to order the Product. He/She Invokes the Netscape Navigator and navigates to the EDG and orders the product.

Table 3.7.17.2-1. Interaction Table - Domain View: User View and Order ASTER GDS Data (3 of 3)

Step	Event	Interface Client	Interface Provider	Data issues	Step Preconditions	Description
N.21	Product Request	CLS (EDG)	DMS (ASTGW)	None	None	The EDG submits the Science User's Product Request to the ASTER Gateway in ODL format via a specific socket.
N.22	Product Request Order	DMS (ASTGW)	MSS (Accountability Management Service)	None	None	The ASTER Gateway sends a message to the MSS to create an order ID.
N.23	Product Request Order Id	MSS (Accountability Management Service)	DMS (ASTGW)	None	None	The MSS sends the ASTER Gateway the order ID for the product request.
N.24	Product Request	DMS (ASTGW)	ASTER GDS	None	None	The ASTER Gateway translates the product request from V0 ODL to ASTER ODL and submits that query to the ASTER Ground Data System (GDS).
N.25	Product Result	ASTER GDS	DMS (ASTGW)	None	None	The ASTER GDS sends an acknowledgment to the ASTER Gateway upon product request receipt.
N.26	Product Result	DMS (ASTGW)	CLS (EDG)	None	None	The ASTER Gateway sends a message to the client acknowledging the receipt of the product request.

3.7.17.3 User View and Order ASTER GDS Data Thread Component Interaction Table

Table 3.7.17.3-1 provides the Component Interaction: User View and Order ASTER GDS Data

Table 3.7.17.3-1. Component Interaction Table: User View and Order ASTER GDS Data (1 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
N.1.1	Submit a Directory Search	EDG User	EDG Client	Command	The EDG user invokes an EDG Client in a Netscape session and sends a directory search request to the ASTER Gateway.
N.2.1	Receive a Directory Search Request	EDG Client	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.
N.2.2	User Profile	EcDmEcsToAsterGateway	EcMsAcRegUserSrvr	CCS Middleware	Upon receiving the request, the ASTER Gateway retrieves the User Profile using the ECS authenticator from the ODL message. The User Registration Server is replicated across DAACs, so a connection is made to the local User Registration Server.
N.3.1	Connect to DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The ASTER Gateway connects to the Data Dictionary database to run a SQL, based on the criteria in the request ODL.
N.3.2	Run Query against DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The SQL query is run against the Data Dictionary database, which returns the metadata of all the granules satisfying the search criteria.
N.4.1	Retrieve results	Sybase ASE	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway retrieves the results of the database query and puts them in an ODL structure to be sent to an ASTER client.
N.4.2	Create ODL	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	LibIK	The ASTER Gateway formats granule metadata into an ODL structure.
N.5.1	Send Results	EcDmEcsToAsterGateway	EDG Client	ODL, Over Sockets	The results in ODL are sent to the ASTER client via the same socket on which it originally received the request.
N.6.1	Submit an Inventory Search request	Science User	EDG Client	Command	The EDG user invokes an EDG Client in a Netscape session and sends an inventory search request to the ASTER Gateway.
N.7.1	Receive a Directory Search Request	EDG Client	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.

Table 3.7.17.3-1. Component Interaction Table: User View and Order ASTER GDS Data (2 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
N.8.1	Connect to DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The ASTER Gateway connects to the Data Dictionary database to run a SQL, based on the criteria in the request ODL.
N.8.2	Run Query against DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The SQL query is run against the Data Dictionary database, which returns the mapping of the V0 to ASTER attributes and key words.
N.9.1	Retrieve results	Sybase ASE	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway retrieves the results of the database query and puts them in an ODL structure to be sent to the ASTER GDS server.
N.9.2	Create ODL	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	LibIK	The ASTER Gateway formats the request in ODL to be sent to the ASTER GDS server.
N.10.1	Send Request	EcDmEcsToAsterGateway	ASTER GDS	ODL, Over Sockets	The request ODL is sent to the ASTER GDS server via sockets.
N.11.1	Send Result	ASTER GDS	EcDmEcsToAsterGateway	CCS Middleware	The ASTER GDS server sends the result ODL over sockets to ASTER Gateway.
N.11.2	Receive result ODL	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	LibIK	The ASTER Gateway receives the result ODL and analyses it. It extracts the Aster attributes.
N.12.1	Inventory Search Result	EcDmEcsToAsterGateway	SYBASE ASE	CtLib	The ASTER Gateway sends the ASTER attributes in the received ODL to the Data Dictionary database for getting the V0 equivalents.
N.12.2	Connect to DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The ASTER Gateway connects to the Data Dictionary database to run a SQL, based on the criteria in the result ODL.
N.12.3	Run Query against DDICT	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The SQL query is run against the Data Dictionary database, which returns the V0 equivalents of the ASTER attributes input to it.
N.13.1	Retrieve results	Sybase ASE	EcDmEcsToAsterGateway	CtLib	The ASTER Gateway retrieves the results of the database query and puts them in an ODL structure to be sent to the client.
N.14.1	Create ODL	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	LibIK	The ASTER Gateway formats the result in ODL.

Table 3.7.17.3-1. Component Interaction Table: User View and Order ASTER GDS Data (3 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
N.14.2	Send Results	EcDmEcsToAsterGateway	EDG Client	ODL, Over Sockets	The results in ODL are sent to the client via sockets.
N.15.1	Submit a Browse Request	Science User	EDG Client	Command	The Science user invokes an EDG Client in a Netscape session and sends a browse request to go to the ASTER Gateway.
N.16.1	Receive a Browse Request	EDG Client	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway receives the request on a specific port and socket on which it is listening. The request is an ODL structure.
N.16.2	Format Browse Request	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	LibIK	The ASTER Gateway reformats the request ODL so that it can be sent to the ASTER GDS server.
N.17.1	Send Browse request to server	EcDmEcsToAsterGateway	ASTER GDS	CCS Middleware	The ASTER Gateway sends the browse request to the ASTER GDS server.
N.18.1	Receive Browse results	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The ASTER Gateway receives the results from the ASTER GDS.
N.19.1	Send Results	EDG Client	EcDmEcsToAsterGateway	CCS Middleware	The ASTER Gateway sends the result to the client.
N.20.1	Creates Product Request	Science User	EDG Client	Command	The EDG user decides to order the product. The user fills out the order form specifying the desired granule(s), and how the order should be fulfilled, and information about the user. The EDG Web Client validates the user's input and requests a correction, if necessary.
N.21.1	Submits Product Request To ASTGW	EDG Client	EcDmEcsToAsterGateway	CCS Middleware	The EDG Web Client submits the Science User's product request to the ASTER Gateway in ODL format.
N.22.1	ASTGW Validates the request	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	Internal	The ASTER Gateway validates the request to ensure that the request is valid before processing it.
N.22.2	ASTGW Creates Order tracking Id	EcDmEcsToAsterGateway	Sybase ASE	CtLib	The ASTER Gateway sends order tracking information to the MSS to create an order-tracking ID.

Table 3.7.17.3-1. Component Interaction Table: User View and Order ASTER GDS Data (4 of 4)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
N.23.1	ASTGW Get Product Request Order Id	Sybase ASE	EcDmEcsToAsterGateway	CtLib	The MSS sends the ASTER Gateway the order-tracking ID for the product request.
N.24.1	ASTGW Converts Product Request ODL to Aster format	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	Internal	The ASTER Gateway converts the Product Request in the form V0 ODL to ASTER ODL.
N.24.2	ASTGW sends the product request to ASTER GDS	EcDmEcsToAsterGateway	ASTER GDS	CCS Middleware	The ASTER Gateway submits the product request to the ASTER GDS.
N.25.1	ASTGW Receives acknowledgment	ASTER GDS	EcDmEcsToAsterGateway	CCS Middleware	The ASTER GDS sends an acknowledgment to the ASTER Gateway upon Product Request receipt.
N.26.1	ASTGW prepares the acknowledgment information	EcDmEcsToAsterGateway	EcDmEcsToAsterGateway	Internal	The ASTER Gateway creates an acknowledgment in the form of V0 ODL. The acknowledgment contains the result of request processing, the EDC contact address, and the order tracking ID.
N.26.2	ASTGW Sends acknowledgment to the client	EcDmEcsToAsterGateway	EDG Client	CCS Middleware	The ASTER Gateway sends the acknowledgment to the EDG client.

3.7.18 ASTER Attached DPRs (Standing Orders) Thread

This thread shows how the ECS supports user requests for attaching standing, on-demand processing orders to a Data Acquisition Request (DAR). The processing and distribution of the on-demand requests that result from these orders is identical to standard on-demand production discussed in Section 3.7.8. This new capability is an extension of the existing on-demand capability.

With this new option, users who submit a DAR can specify any higher level processing they want to be performed on the resulting granules. This request for higher level processing, to be performed on DAR output, can be placed at either DAR submission time, or at a later date.

Rather than placing an active order for granules that have not yet been generated, the standing order can be considered a template. When the granule(s) of the specified type are received by ECS, the standing order causes an on-demand order to be generated without additional actions by the user. The standing order continues to be in force for as long as the DAR is active. After the DAR expires, the standing order eventually is deactivated, and then finally removed from production.

3.7.18.1 ASTER Attached DPRs (Standing Orders) Thread Interaction Diagram - Domain View

Figure 3.7.18.1-1 depicts the ASTER Attached DPRs (Standing Orders) Interaction.

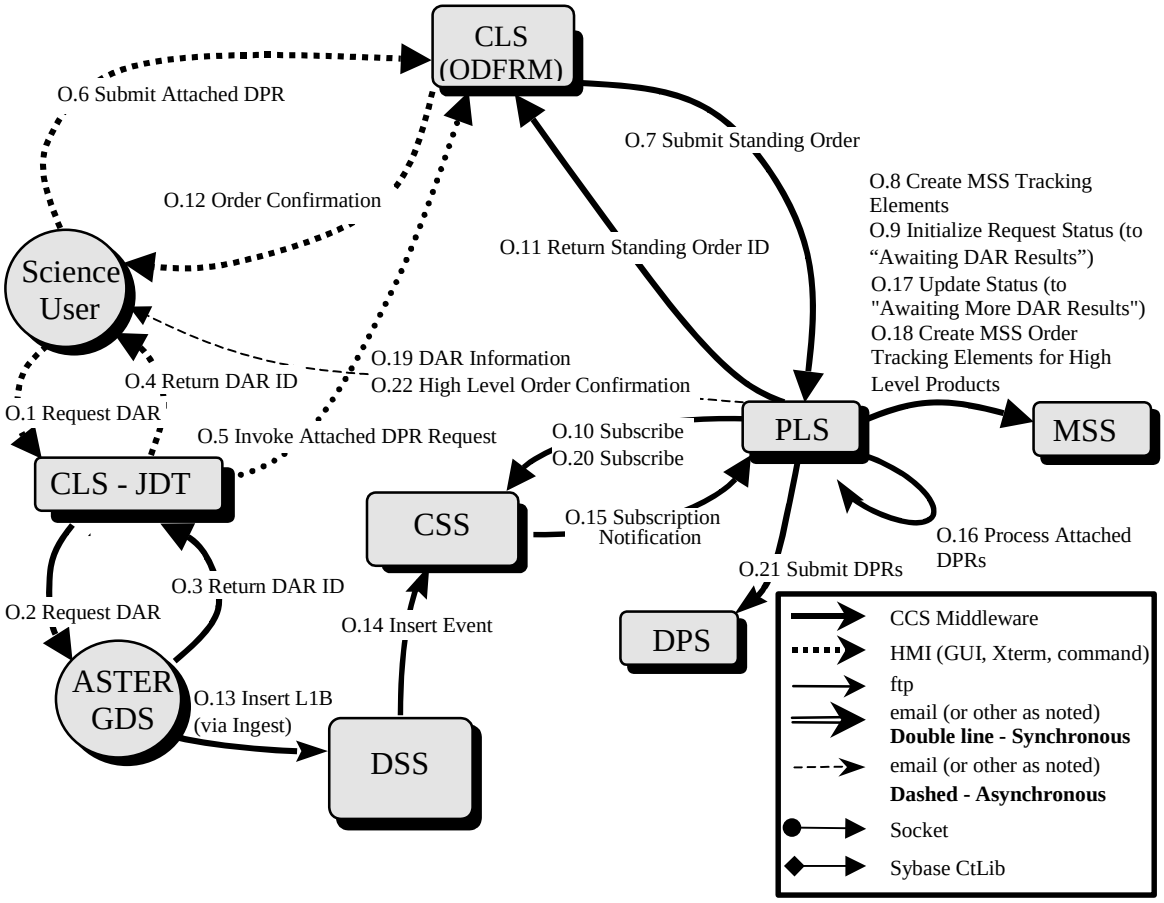

Figure 3.7.18.1-1. ASTER Attached DPRs (Standing Orders) Interaction Diagram

3.7.18.2 ASTER Attached DPRs (Standing Orders) Thread Interaction Table - Domain View

Table 3.7.18.2-1 provides the Interaction - Domain View: ASTER Attached DPRs (Standing Orders).

Table 3.7.18.2-1. Interaction Table - Domain View: ASTER Attached DPRs (Standing Orders) (1 of 3)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
O.1	Request DAR	Science User	CLS Java DAR Tool (JDT)	None	The requestor must be an authorized user.	The scientist initiates the Data Acquisition Request (DAR).
O.2	Request DAR	CLS (JDT)	ASTER GDS (Japan)	None	None	The DAR is passed to the ASTER Ground Data System (GDS) in Japan.
O.3	Return DAR ID	ASTER GDS (Japan)	CLS (JDT)	None	None	The DAR ID is returned to the Java DAR Tool.
O.4	Return DAR ID	CLS (JDT)	Science User	None	None	The DAR ID is returned to the scientist.
O.5	Invoke Attached DPR Request	CLS (JDT)	CLS (ODFRM)	None	DAR ID, expiration time, and production name must be available.	The On-Demand Product Request Form (ODFRM) is called from the Java DAR Tool.
O.6	Submit Attached DPR	Science User	CLS (ODFRM)	None	None	The user submits a product request via the On-Demand Product Request Form.
O.7	Submit Standing Order	CLS (ODFRM)	PLS (ODPRM)	None	None	All the user's selections for the Attached DPRs Production Request are stored in a GI Parameter List, which is passed to an On-Demand Production Request Manager (ODPRM - a PLS server).
O.8	Create MSS Tracking Element	PLS (ODPRM)	MSS (Accountability Management Service)	None	None	A standing order is created in the MSS database.
O.9	Initialize Request Status (to "Awaiting DAR Results")	PLS (ODPRM)	MSS (Accountability Management Service)	None	None	The status of the Attached DPRs request is initialized (to "Awaiting DAR Results").

Table 3.7.18.2-1. Interaction Table - Domain View: ASTER Attached DPRs (Standing Orders) (2 of 3)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
O.10	Subscribe	PLS (ODPRM)	CSS (SBSRV)	None	None	The PLS places a subscription on the input products desired by the user.
O.11	Order ID Returned	PLS (ODPRM)	CLS (ODFRM)	None	None	The order ID is returned to the On-Demand Product Request Form.
O.12	Order Confirmation	CLS (ODFRM)	Science User	None	None	The On-Demand Product Request Form notifies the science user that the request has been submitted.
O.13	Insert L1B (via Ingest)	ASTER GDS (Japan)	DSS (SDSRV)	This is newly received data	Waiting for this data	This data has just been received from Japan.
O.14	Insert Event	DSS (SDSRV)	CSS (SBSRV)	None	None	Trigger the insert of the desired product data. Since the PLS placed the subscription for the desired product, the PLS receives the Subscription Notification.
O.15	Subscription Notification	CSS (SBSRV)	PLS (ODPRM)	None	None	The Subscription Server notifies the PLS when data is available in the archive by a subscription notification.
O.16	Submit On Demand Information	PLS (ODPRM)	PLS (ODPRM)	The product has arrived from Japan.	Waiting for this product	The order is processed as a standard on-demand order. That is, the fourth On Demand Manager thread wakes up and starts processing on-demand information.
O.17	Update status (to "Awaiting More DAR Results")	PLS (ODPRM)	MSS (Accountability Management Service)	None	None	Update the order-tracking element (to "Awaiting More DAR Results").
O.18	Create MSS Order Tracking Elements for High Level Products	PLS (ODPRM)	MSS (Accountability Management Service)	None	None	The PLS creates order-tracking elements.

Table 3.7.18.2-1. Interaction Table - Domain View: ASTER Attached DPRs (Standing Orders) (3 of 3)

Step	Event	Interface Client	Interface Provider	Data Issues	Step Preconditions	Description
O.19	DAR information	PLS (ODPRM)	Science User	None	None	Send e-mail notification to the Science User, notifying them of the DAR ID, DAR expiration time, order ID, and input granule UR.
O.20	Subscribe	PLS (ODPRM)	CSS (SBSRV)	None	None	The PLS places a subscription on the output products desired by the user.
O.21	Submit DPRs	PLS (ODPRM)	DPS (PRONG)	None	None	The DPR(s) for PGEs to produce the requested products are created and submitted to the DPS.
O.22	High Level Order Confirmation	PLS (ODPRM)	Science User	None	None	Send email notification to the Science User, notifying him/her that the requested product(s) have been produced.

3.7.18.3 ASTER Attached DPRs (Standing Orders) Thread Component Interaction Table

Table 3.7.18.3-1 provides the Component Interaction: ASTER Attached DPRs (Standing Orders).

Table 3.7.18.3-1. Component Interaction Table: ASTER Attached DPRs (Standing Orders) (1 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
O.1.1	Request DAR	Science User	EcClWbJdt	GUI	The scientist initiates the Data Acquisition Request (DAR).
O.2.1	Request DAR	EcClWbJdt	ASTER GDS (Japan)	CCS Middleware	The DAR is passed to the ASTER Ground Data System (GDS) in Japan.
O.3.1	Return DAR ID	ASTER GDS (Japan)	EcClWbJdt	CCS Middleware	The DAR ID is returned to the Java DAR Tool (JDT).
O.4.1	Return DAR ID	EcClWbJdt	Science User	GUI	The DAR ID is returned to the scientist.
O.5.1	Invoke On-Demand Request	EcClWbJdt	EcClOdProductRequest (ODFRM)	GUI	The On-Demand Product Request Form is called from the JDT.

Table 3.7.18.3-1. Component Interaction Table: ASTER Attached DPRs (Standing Orders) (2 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
O.6.1	Submit Attached DPR	Science User	EcClOdProductRequest (ODFRM)	GUI	The user submits a product request via the On-Demand Product Request Form.
O.7.1	Submit Standing Order	EcClOdProductRequest (ODFRM)	EcPlOdMgr (ODPRM)	None	The standing order is submitted to the On-Demand Production Request Manager (ODPRM). This process is identical to that documented in the ASTER On-Demand High-Level production thread. Standing Orders is an extension of High Level production. Refer to Section 3.7.8.3 Steps E.5.1 - E.6.10.
O.8.1	Create MSS Standing Order	EcPlOdMgr (ODPRM)	EcMsAcOrderSrvr	CCS Middleware	A standing order is created in the MSS database.
O.9.1	Initialize Status (to “Awaiting DAR Results”)	EcPlOdMgr (ODPRM)	EcMsAcOrderSrvr	CCS Middleware	The status of the On-Demand request is initialized (to “Awaiting DAR Results”).
O.10.1	Subscribe	EcPlOdMgr (ODPRM)	EcSbSubServer	CCS Middleware	A subscription is placed with the Subscription Server. This process is identical to that documented in the ASTER On-Demand High-Level Production thread. Standing Orders is an extension of High Level production. Refer to Section 3.7.8.3 Steps E.9.1 - E.9.4.
O.11.1	Order ID Returned	EcPlOdMgr (ODPRM)	EcClOdProductRequest (ODFRM)	CCS Middleware	The order ID is returned to the On-Demand Product Request Form from the PLS.
O.12.1	Order Confirmation	EcClOdProductRequest (ODFRM)	Science User	GUI	An order confirmation is displayed via the On-Demand Product Request Form to the science user.
O.13.1	Insert L1B (via Ingest)	ASTER GDS (Japan)	EcDsScienceDataServer	CCS Middleware	This data has just been received from Japan.
O.14.1	Insert Event	EcDsScienceDataServer	EcSbSubServer	CCS Middleware	Upon successful insertion of the DAR output product, the Insert event is triggered. Provided with the event triggering is the UR of the inserted granule.

Table 3.7.18.3-1. Component Interaction Table: ASTER Attached DPRs (Standing Orders) (3 of 3)

Step	Event	Interface Client	Interface Provider	Interface Mech.	Description
O.14.2	Retrieve Subscriptions	EcSbSubServer	Sybase ASE	CtLib	The Subscription Server queries the Sybase ASE database determining which subscriptions need to be activated or fired. Each query “hit” is an activated subscription and executes independently.
O.15.1	Subscription Notification	EcSbSubServer	EcPlSubMgr	CCS Middleware	The subscriptions are submitted for each data type individually.
O.16.1	Submit On Demand Information	EcPlOdMgr	EcPlOdMgr	CCS Middleware	The order is processed as a standard On-Demand order. That is, the fourth On Demand Manager thread wakes up and starts processing on-demand information.
O.17.1	Update Status (to "Awaiting More DAR Results")	EcPlOdMgr	EcMsAcOrderSrvr	CCS Middleware	Update the order-tracking element (to "Awaiting More DAR Results").
O.18.1	Create MSS Order Tracking Elements	EcPlOdMgr (ODPRM)	EcMsAcOrderSrvr	CCS Middleware	The MSS order tracking elements are created.
O.19.1	DAR Information	EcPlOdMgr	Science User	E-mail	The user is notified of the DAR ID, expiration time, order ID, and input granule UR.
O.20.1	Subscribe	EcPlOdMgr (ODPRM)	EcSbSubServer	CCS Middleware	A subscription is placed with the Subscription Server. This process is identical to that documented in the ASTER On-Demand High Level Production thread. Standing Orders is an extension of High Level Production. Refer to Section 3.7.8.3, Steps E.9.1 - E.9.4.
O.21.1	Create DPR	EcPlOdMgr	EcDpPrJobMgmt	CCS Middleware	The On-Demand Manager sends to the DPS the DPRID and whether the DPR is waiting for external data.
O.22.1	Completion Notice	EcPlOdMgr (ODPRM)	Science User	E-mail	Email is sent from On-Demand Production Request Manager (ODPRM) to the user indicating (after all Attached DPRs for this request have completed) that the Attached DPRs request has been satisfied.